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Accord relatif aux Pêches dans le Sud de l'Océan Indien

Report of the Eighth Meeting of the Scientific Committee of the Southern Indian Ocean Fisheries Agreement (SIOFA)

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Agenda item 1 – Opening

Agenda item 1.1. Welcome from the Scientific Committee Chair

1. The Executive Secretary, Mr Thierry Clot, gave welcoming remarks. He expressed his pleasure to welcome the participants to the meeting, which he believed would serve as an excellent opportunity to discuss and exchange ideas on a range of critical topics for advancing the scientific work of SIOFA. He also expressed his hope for open and fruitful discussions that would yield insights for the conservation and sustainable use of fisheries resources. Lastly, he expressed his gratitude to the EU for funding the meeting and the Oceanographic Centre of the Canary Islands, Spanish Institute of Oceanography for hosting it. The full statement is available as **Annex A**.
2. The Chair of the Scientific Committee (SC), Mr Alistair Dunn, gave opening remarks. He thanked the SC members for their commitment and efforts in advancing the work of the SC in the intersessional period, including the intersessional VME, fisheries summaries, harvest strategy pre-assessment, and deepwater sharks workshops. He emphasised the important role of the SC in providing scientific advice to the Meeting of the Parties (MoP) for informing the formulation of Conservation and Management Measures (CMMs). Lastly, he highlighted the importance of collaboration and knowledge-sharing for deepening the SC's scientific understanding of the fisheries resources and marine environments in the SIOFA Area and thanked the participants in advance for their attendance and engagement.
3. On behalf of the Oceanographic Centre of the Canary Islands, Mr Roberto Sarraalde Vizuite welcomed the participants and expressed the Centre's honour to be hosting the meeting. He also provided an overview of the structure of the Spanish Institute of Oceanography and the work of the Oceanographic Centre of the Canary Islands.

Agenda item 1.2. Introduction of participants

4. The list of registered participants is attached (**Annex B**).

Agenda item 1.3. Introduction to the meeting facilities and meeting arrangements

5. The Science Officer, Dr Marco Milardi, introduced the meeting facilities, the online system, and the meeting practicalities.
6. In this report, paragraphs with key recommendations and advice to the MoP have been highlighted in grey.

Agenda item 2 – Administrative arrangements

Agenda item 2.1. Adoption of the agenda

7. The agenda was adopted (**Annex C**).

Agenda item 2.1.1. Confirmation of meeting documents

8. The table of meeting documents and related items (**Annex D**) was confirmed.

Agenda item 2.1.2. Confirmation of meeting documents

9. Mr Alexander Meyer (Urban Connections, Tokyo) was appointed to act as rapporteur, with assistance from delegates.

Agenda item 2.2. Scientific Committee Chair's report

10. The Chair outlined the intersessional activities undertaken since the SC7 meeting.

Agenda item 3 – Fisheries Reports

Agenda item 3.1. National Reports

Agenda item 3.1.1. CCP annual National Reports

11. Annual national reports were submitted by Australia, China, the Cook Islands, the European Union (EU), France (Overseas Territories), Japan, Korea, Mauritius, Seychelles, Chinese Taipei, Thailand, Comoros, and India.

Australia Annual National Report: SC-08-01

12. Australia presented its annual national report. Australian operators are currently authorised by the Australian Government to target various species with midwater trawl, demersal trawl, demersal line, and potting gears. One trip was undertaken by one vessel using line methods in 2022. The vessel recorded 113,026 demersal longline hooks (20 sets). The majority of catch comprised *Dissostichus eleginoides*. All catch and effort data for fishing operations during 2022 will be submitted to SIOFA in accordance with CMM 2022/02. All data presented in this report comply with Australia's domestic policy associated with the dissemination of fisheries data and this report does not disclose any non-public domain data within the meaning of SIOFA CMM 2016/03 (Data Confidentiality).
13. Australia explained that, at the request of the SC, in this year's annual national report, it has reported catch composition by tonnes, rather than only by proportion, for 2018–2022. Although such reporting of catch composition is not mandatory, Australia has been able to present this information thanks to the agreement and cooperation of the members of its industry.
14. The SC noted the National Report provided by Australia.

China Annual National Report: SC-08-02

15. China presented its annual national report. In the SIOFA Area, China operated three different types of fisheries intermittently from 2000 to 2017: Light seining targeting mackerel and *Bramidae* family; bottom longlining targeting ruby snapper, etc.; and demersal trawling targeting dories and orange roughy. Since 2018, China has not operated any SIOFA fisheries. Based on accumulated data and statistics, the report summarised fishing activities by Chinese-flagged vessels not targeting highly migratory fish stocks in SIOFA Area. The report noted that China has been authorising squid jigging since 2003 in the Indian Ocean, but there have no squid jigging vessels fishing in the SIOFA Area. Hence squid jigging was not included in this report. Since 2019, China has been a Contracting Party to SIOFA.
16. The SC noted the National Report provided by China.

The Cook Islands Annual National Report: SC-08-03

17. The Cook Islands presented its annual national report. In 2022 the Cook Islands authorised two vessels to fish in the SIOFA Area. These vessels targeted deepwater finfish species, primarily alfonsino (*Beryx splendens*) and orange roughy (*Hoplostethus atlanticus*) using bottom and midwater trawls. The report noted the catch and effort data, fisheries data collection, research activities, vulnerable marine ecosystem (VME) thresholds for bottom fishing activities, biological sampling and length/age composition of catches, the observer programme, the port sampling and inspection programme, the vessel monitoring system, and interactions with sharks. Appendices were also

provided on the translation between Cook Islands and United Nations Food and Agriculture Organization (FAO) species codes, and the list of Benthic Protected Areas (BPAs) closed to Cook Island flagged vessels.

18. The SC noted the National Report provided by the Cook Islands.

EU Annual National Report: SC-08-04

19. The EU presented its annual national report. The report presented an overview of the fishery data available from the EU fleet operating in the SIOFA Area, and updated previous reports to the end of 2022. One active EU bottom longline vessel flagged to Spain conducted operations in three fishing grounds, namely Walter Shoals (Subarea 2) and Southwest Indian Ridge (Subareas 3b and 3a). Information about catch, bycatch, catch per unit effort (CPUE) and discards by year and area, fishing footprint, data collection, VME, biological sampling and other data of interest were included. The report noted that the EU would submit all catch and effort data for fishing operations during 2022 to SIOFA in accordance with CMM 2022/02 (Data Standards). No VME indicator thresholds were triggered during 2021.
20. The SC noted the National Report provided by the EU.

France (Overseas Territories) Annual National Report: SC-08-05

21. France (Overseas Territories) presented its annual national report. The report summarised and updated fishing activity by French Overseas Territories-flagged vessels in the SIOFA Area for 2022. It also included the bottom fishing impact assessment (BFIA) report, the VME report, the observer program implementation report, and the annual data verification report, according to the circular 2022-03 Annex A. The fishing activity was very low in 2022, with only one longline vessel being operated in the SIOFA Area during two trips for a total of 18 days in the toothfish fishery in Subarea 3a. All catch and effort data for fishing operations during 2022 will be submitted to SIOFA in accordance with CMM 2022/02 (Data Standards). No VME indicator thresholds were triggered during 2022.
22. The SC noted the National Report provided by France (OT).
23. The SC noted that there has been no change in the French (OT) fishing fleet and the fishing activities were very low during the previous calendar year. The SC noted that, based on the annual report, the French (OT) BFIA did not need to be updated.

Japan Annual National Report: SC-08-06

24. Japan presented its annual national report. The report described Japan's fisheries; catch, effort and CPUE; fisheries data collection and research activities; VME interactions; biological sampling and length/age composition of catches; data verification mechanisms; and the observer program. In the SIOFA Area, Japan has operated two different types of fisheries discontinuously for 46 years (1977-2022). These were trawl fisheries targeting splendid alfonsino and bottom longline fisheries targeting Patagonian toothfish. Based on available information, the report described the information for trawl and bottom longline fisheries respectively, highlighting the most recent five years (2018-2022). Information through 2021 was compiled based on logbooks, and information for 2022 was tentatively compiled from scientific observer data and may be revised next year.
25. The SC noted the National Report provided by Japan.

Korea Annual National Report: SC-08-07

26. Korea presented its annual national report. There were no Korean flagged vessels fishing in the SIOFA Convention Area from 2014 to 2022. Bottom longline fishing vessels had targeted Patagonian toothfish (*Dissostichus eleginoides*) and hapuka (*Polyprion* spp, Family *Polyprionidae*) and a trawl vessel targeting splendid alfonsino (*Beryx splendens*) and pelagic armorhead (*Pseudopentaceros richardsoni*) operated in

the SIOFA Area until 2013. Catch and effort data, including fleet composition, CPUE summaries, biological data, and other data of interest, for those seasons fished were previously submitted to the SIOFA Secretariat in SC-06-19.

27. The SC noted the National Report provided by Korea.
28. The SC noted that no fishing had been conducted by Korean flagged vessels in 2022.

Mauritius Annual National Report: SC-08-08

29. Mauritius presented its annual national report. Mauritius conducts three fisheries in the SIOFA Area: the industrial shallow water banks fishery, the semi-industrial shallow water banks fishery, and the semi-industrial deepwater snapper/grouper fishery. All the fisheries differ with respect to fishing methods, species targeted, catch and vessel/boat size. Mauritian fishing vessels are not involved in fishing with gears that interact with VMEs. In 2022, the Mauritian fleet was composed of three fishing semi-industrial vessels. All three operated in the semi-industrial deepwater fishery and two of them also operated in the semi-industrial shallow water fishery. No fishing vessels from the 'Industrial shallow water fishery' operated on the Saya de Malha Bank. The report also provided more detailed descriptions of each fishery and noted the catch, effort and CPUE, fisheries data collection, biological sampling, the data verification mechanism, and the observer and port sampling programmes.
30. The SC noted the National Report provided by Mauritius.
31. The SC noted that this is the first time that Mauritius has presented its National Report to the SC and thanked Mauritius for its comprehensive and detailed report.

Seychelles Annual National Report: SC-08-09

32. Seychelles presented its annual national report. The report described Seychelles' fishing activities within the SIOFA Area. The Seychelles had no locally flagged vessels operating in the SIOFA Area in 2022. Seychelles flagged vessels operating on the high seas consisted of mostly purse seiners and longliners that target tuna and tuna-like species and are therefore operating in the Indian Ocean Tuna Commission (IOTC) area of competence. The majority of local vessels operated within the Seychelles exclusive economic zone (EEZ) and targeted mostly demersal and pelagic species using a range of fishing gear such as traps, handline, dropline and pelagic longlines.
33. The SC noted the National Report provided by the Seychelles.

Chinese Taipei Annual National Report: SC-08-10

34. Chinese Taipei presented its annual national report. Oilfish, including *Ruvettus pretiosus* and *Lepidocybium flavobrunneum*, was identified as bycatch of large-scale Taiwanese tuna longline fleet prior to 2005. Parts of tuna longliners shifted to the southwest Indian Ocean for fishing oilfish seasonally after 2005 to obtain extra earnings. The numbers of longliners fished for oilfish seasonally were between 9 to 51 from 2000 to 2021, and 37 longliners fished for oilfish within the SIOFA Area in 2022. The average catch in the recent 5 years (2018 to 2022) was at around 5,070 t.
35. The SC noted that this year, Chinese Taipei's National Report included more detailed catch by species information, distinguishing between oilfish (*Ruvettus pretiosus*) and escolar (*Lepidocybium flavobrunneum*). The SC requested that Chinese Taipei submit such oilfish and escolar-specific data for 2021 in its upcoming annual data submission and also coordinate with the Secretariat to update its catch data for prior years (2018-2020) with such species-specific information.
36. The SC noted the National Report provided by Chinese Taipei.

Thailand Annual National Report: SC-08-11

37. Thailand presented its annual national report. The report summarised and updated fishing activities of Thai flagged fishing vessels that operated in the SIOFA Area in

2022. There were 4 vessels operating in the area, in Saya de Malha bank, between latitude 9.50 to 11.00 °S and longitude 60.50 to 62.00 °E, using the same fishing ground as the previous year. Otter board trawl were the main fishing gear used, with handline being an alternative gear. The fishing effort for both trawl and handline techniques slightly decreased from 2021, resulting in a decreased trawl catch. However, the handline catch, which comprised high-value fish, sharply increased due to the increasing of domestic demand after the relaxation of COVID-19 restrictions. Lizardfish, round scads and threadfin breams were the dominant species in the trawl catch, while trevallies were prominent in the handline catch.

38. The SC noted the National Report provided by Thailand.

Comoros Annual National Report: SC-08-12

39. The Comoros's annual national report was taken as read. In previous years, Comoros has operated only one vessel in the SIOFA Area. However, during 2022, this vessel did not fish in the SIOFA Area due to technical problems with the vessel. Comoros's catch data from previous years have been submitted to the SIOFA Secretariat.

40. The SC noted the National Report provided by Comoros.

India Annual National Report: SC-08-113

41. India's annual national report was taken as read. There were no Indian flagged commercial fishing vessels fishing in the SIOFA Area in 2022. However, India has plans to expand the fishing areas of its fisheries to the SIOFA Area in the near future.
42. The SC noted the National Report provided by India.

Agenda item 3.1.2. Guidelines for the submission of National Reports

43. The Science Officer presented SC-08-24, which proposed further updates to the Guidelines for the Submission of Annual National Reports to the SIOFA SC. The latest update included the addition of examples from CCPs' national reports to the Guidelines with the purpose of clarifying the text expected from CCPs when compiling their annual reports as requested by the SC at SC7.
44. The SC reviewed, updated, and adopted the Guidelines (SC-08-24-Rev1).
45. The Deep Sea Conservation Coalition (DSCC) welcomed the reporting of more detailed VME information in this year's National Reports. The DSCC suggested that it would be useful to report more detailed information about gear configurations, such as mesh size.
46. The SC noted that the quality and level of detail of the National Reports continues to improve each year. The SC agreed to continue to review and further improve the Guidelines at each year's SC meeting as a standing agenda item.
47. The SC Chair informed the participants that he, the Secretariat and the Cook Islands have developed a LaTeX template for the creation of Scientific Committee reports, and would investigate developing a template for National Reports. At the request of the SC, the Secretariat opened a SIOFA Secretariat GitHub account at <https://github.com/SIOFASecretariat> for sharing these templates, and other code and resources for delegations to help prepare documents and analyses for the SC. The SC also encouraged CCPs to make use of the repository and to use this to share any relevant analysis code and scripts.
48. The SC held preliminary discussions on potential ways to make data available to the SC in a timelier manner. The SC noted that this may enable the identification of emerging trends in closer to real time, but also recognised that there are various constraints to achieving this, including the time required by both CCPs and the Secretariat to process, verify and finalise data submissions and their respective

capacities to complete these processes more quickly. The SC encouraged CCPs to continue to consider this issue intersessionally.

Agenda item 3.2. Summary of SIOFA fisheries

Agenda item 3.2.1. Overview of SIOFA fisheries

49. The SIOFA Science Officer presented a draft Overview of SIOFA Fisheries 2023 (SC-08-14-Rev1), which summarised recent years' fishing activities, main species catch and other aspects of scientific interest. The previous version of this document, which included data up to 2020, was originally prepared by the SIOFA Secretariat, endorsed by SC7 and MoP9, and published in 2022. The new version included figures with data updated to 2021 and some additional elements (e.g., around toothfish releases and recaptures).
50. The SC reviewed, further updated, and finalised the Overview of SIOFA Fisheries 2023 (SC-08-14-Rev2).
51. The SC requested the Secretariat to include the total catches per year for each of the main SIOFA target species or for each of the species covered by the fisheries summaries, and to aggregate the data at a level that would be consistent with the data confidentiality rules in CMM 2016/03 (Data Confidentiality).
52. The SC recalled its advice from SC8 paragraph 37, and noted that it would be useful to include in the fisheries overview the catch and effort data for the most recent year, even if they are preliminary data, but recognised that there are practical difficulties that would need to be resolved before this can be achieved. The SC noted that national reports which contain the most recent year information could be used to support more informed discussions at the SC meeting.
53. The FAO welcomed the continued development and publishing of the Overview of SIOFA Fisheries, noting the document's usefulness not only for scientists, but also managers and the general public, and congratulated the SC on developing such a high-quality report.
54. The SIOFA Science Officer outlined SC-08-INFO-04, which described the status and trends of main SIOFA fisheries, as reported in the Overview of SIOFA Fisheries 2023.
55. The SC noted SC-08-INFO-04.
56. The SC noted that generalised linear model (GLM) standardisations of CPUE would be a useful addition to the Overview of SIOFA Fisheries 2024. The SC requested the Secretariat work with CCPs during the intersessional period to develop, where possible, standardised GLM CPUE indices for each of the main SIOFA fish stocks.

Agenda item 3.2.2. CCP fishery characterisations

57. The Cook Islands presented SC-08-INFO-14, which provided a characterisation of its SIOFA fishery and data collection efforts. The Cook Islands has a fishing fleet operating in the SIOFA Area consisting of two trawlers that target alfonsino (*Beryx splendens*) and orange roughy (*Hoplostethus atlanticus*) over a large portion of the SIOFA Area mostly south of 25 °S with two main areas of density one largely between 30 °E and 60 °E and the second East of 80 °E. Catch and effort data are collected and biological samples are retained. The characterisation described the catch and effort as well as bycatch by these vessels and gave a detailed discussion of the shark bycatch and a summary of the interactions with benthic organisms. It included CPUE standardisations of the alfonsino catch that showed an index based on all the alfonsino positive catch records. These data east and west of 80 °E exhibited similar trends that were similar to those presented in the 2020 stock assessment. The trajectory since the

last year of that assessment is consistent with the trend over the previous 8 years which has fluctuated without trend.

58. The SC thanked the Cook Islands for preparing the characterisation and noted that this was very helpful for understanding the Cook Islands' fishery and data collection efforts.
59. The SC noted that the stock trajectory of alfonsino has not changed appreciatively since the 2020 assessment.
60. The EU presented SC-08-INFO-17, a paper that it jointly prepared with France (Overseas Territories) and that provided a characterisation of the Del Cano Rise and southern Southwest Indian Ridge toothfish fisheries during the period 2000–2022. The characterisation included descriptions of the two fisheries, data collected and data collection methods, catch trends and distribution, catch composition, toothfish tagging/recaptures, and marine mammal interactions (depredation).
61. The EU noted that there is a clear distinction of the catch history and catch rates trends for the two fisheries. Data limitations, as data gaps for some CCPs fishing in the SIOFA Area or quantification of depredation, are a constraint to address a robust stock characterisation. The Project Stock structure of Patagonian toothfish (SER2022-TOP2) funded under an EU Grant agreement will aid the better understanding dynamics of Patagonian toothfish in the SIOFA Area. Given the data limited situation, with data being insufficient for integrated long-term stock assessments, precautionary catch limits should be applied and updated according to the availability of the new data. The paper recommended to follow a set of rules, based on the CCAMLR trend analysis rules (https://fishdocs.ccamlr.org/TrendAnalysis_2020.pdf), where a maximum catch limit could be determined based on an exploitation rate that can remain stable, increase or decrease within defined parameters based on the trend of local biomass estimates over available time, either estimated through tag-recaptures or through CPUE over a given seabed area. This method would allow for continued exploration and associated data collection towards longer-term assessment models, while at the same time annually adjusting the exploitation rate to local estimates. The paper also recommended setting two different management units to manage toothfish fisheries of Del Cano and southern Southwest Indian Ridge, encouraging a holistic approach to toothfish management for all SIOFA toothfish fisheries.
62. The SC thanked the EU and France (Overseas Territories) for preparing the characterisation, which was very helpful for understanding the Del Cano Rise and southern Southwest Indian Ridge toothfish fisheries.
63. The SC encouraged other CCPs to provide characterisations of their own fisheries to SC9 and to consider the characterisations prepared by the Cook Islands and by the EU and France (Overseas Territories) as model examples.

Agenda item 3.3. Ecosystem and Fisheries Summaries

Agenda item 3.3.1. Report from the Intersessional Workshop the development of ecosystem and fisheries summaries (WS2022-SUM1)

64. The Convener of the Intersessional Workshop the Development of Ecosystem and Fisheries Summaries, the SC Chair, gave a summary of the outcomes of the workshop. The full report is available as SC-08-22.

Agenda item 3.3.2. Ecosystem Summary

65. The Science Officer presented SC-08-15, which described the main known effects of SIOFA fisheries on ecosystems and species in the SIOFA Area and summarised the available data with an emphasis on the most recent five years. The draft was originally prepared by the SIOFA Secretariat and first presented during the 4th meeting of the Protected Areas and Ecosystems Working Group (PAEWG4) and at SC7. The draft

was then developed during the intersessional period and discussed in a specific SIOFA Workshop (WS2022-SUM1) where detailed feedback was provided on the document.

66. The SC reviewed, further updated, finalised and endorsed the Ecosystem Summary 2023 (SC-08-15-Rev1).
67. When reviewing the ecosystem summary, the SC noted that some shark bycatch data appeared to be missing from some of the figures. Upon further investigation, the SC elucidated that this was due to an issue with the way in which the data had been provided and tabulated, rather than any data being unreported or missing. The SC noted that this should be identified as an issue in the current report, and requested the Secretariat to resolve this issue when preparing the ecosystem summary for 2024. The Secretariat asked for clarification from the CMM on the notion of presence or absence of VME of observer data. Captains should note for VMEs per set: yes or no. The VME Workshop noted that encounters from demersal longline are required to be reported at the line segment level (i.e., per 1000 hooks or 1200 m, see CMM 2020/01 (Interim Management of Bottom Fishing)), but that the data record VMEs for each haul/set. The SC noted that this is a decision for the MoP considering that the notion of segment is used to define the catch thresholds for VME.
68. The Data Officer, Mr Pierre Périès, explained that, in accordance with CMM 2022/02 (Data Standards), CCPs are supposed to use the International Standard Statistical Classification of Fishing Gear (ISSCFG) codes when describing their fishing methods, but that CCPs do not always do so for their longline gears. The SC reminded CCPs to follow these codes and agreed that demersal longlines should be recorded as LLS and other longlines should be recorded as LLD or LL. The SC invited the CCPs to work with the Secretariat to identify observer data that are not associated with catch data.

Agenda item 3.3.3. Fisheries Summaries for toothfish (*Dissostichus eleginoides*, TOP), alfonsino (*Beryx splendens*, BYS), orange roughy (*Hoplostethus atlanticus*, ORY), oilfish (*Ruvettus pretiosus*, OIL, and *Lepidocybium flavobrunneum*, LEC), tarakihi (*Nemadactylus macropterus*, TAK), wreckfish (*Polyprion americanus*, WRF) and hapuku (*Polyprion oxygeneios*, WHA)

69. The Science Officer presented SC-08-16, which provided the SIOFA fishery summary for orange roughy (*Hoplostethus atlanticus*). The SC reviewed, further updated and endorsed the SIOFA fishery summary for orange roughy (SC-08-16-Rev1).
70. The SC agreed that for orange roughy, in the public version of the document, as there is currently only one vessel in the fishery, total catches will be presented as a rolling three-year average.
71. The Science Officer presented SC-08-17, which provided the SIOFA fishery summary for alfonsino (*Beryx splendens*, *Beryx decadactylus*, *Beryx* spp.).
72. The Science Officer presented SC-08-18, which provided the SIOFA fishery summary for toothfish (*Dissostichus eleginoides*, *Dissostichus mawsoni*, *Dissostichus* spp.). The SC reviewed and further updated the SIOFA fishery summary for toothfish (SC-08-18-Rev1).
73. The Science Officer presented SC-08-19, which provided the SIOFA fishery summary for oilfish (*Ruvettus pretiosus*) and escolar (*Lepidocybium flavobrunneum*). The SC reviewed and further updated the SIOFA fishery summary for oilfish and escolar (SC-08-19-Rev1).
74. The SC held further discussions on the SIOFA fisheries summaries for orange roughy, alfonsino, toothfish, and oilfish and escolar under agenda item 6.
75. The Science Officer presented SC-08-20, which provided the SIOFA fishery summary for tarakihi (*Nemadactylus macropterus*).

76. The SC reviewed and further updated the SIOFA fishery summary for tarakihi (SC-08-20-Rev1).
77. The Science Officer presented SC-08-21, which provided the SIOFA fishery summary for hapuka (*Polyprion spp.*), hapuku wreckfish (*Polyprion oxygeneios*), wreckfish (*Polyprion americanus*).
78. The SC reviewed and further updated the SIOFA fishery summary for hapuka, hapuka wreckfish, and wreckfish (SC-08-21-Rev1).
79. The SC agreed to continue to develop and update the SIOFA fisheries summaries. The SC agreed to the following timeline for conducting the next reviews of the SIOFA fisheries summaries:
 - i. Orange roughy: 2024
 - ii. Alfonsino: 2024
 - iii. Toothfish: 2024
 - iv. Oilfish and escolar: 2024
 - v. Hapuka, hapuku wreckfish, wreckfish: 2024
 - vi. Tarakihi: Due to the small reported catch of this species, the updating of this fishery summary is considered a low priority, and will be considered at a future date.
 - vii. Common mora (*Mora moro*): 2024
80. The SC agreed to work towards enabling automated updates of the fisheries in future. The SC noted that, as part of those efforts, it would be important to carefully consider which data should go into the fisheries summaries and how they are managed.
81. The SC recommended that when consultants are contracted to conduct stock assessment work (including analyses that estimate risk), the objectives for the project should include proposing updates to the relevant fishery summary for consideration by SC.
82. The SC recognised and expressed its appreciation for the hard work of the SIOFA Secretariat and especially the SIOFA Science Officer in preparing and continually refining the ecosystem and fisheries summaries in advance of and during the SC meeting.

Agenda item 3.4. Advice to the MoP

83. The SC recommended that the MoP endorse the SIOFA ecosystem summary (SC-08-15-Rev1), and request the Secretariat to make a public version of it, with confidential information removed, available on the SIOFA website.
84. The SC recommended that the MoP endorse the SIOFA fisheries Overview (SC-08-14-Rev1), and request the Secretariat to make a public version of it, with confidential information removed, available on the SIOFA website.
85. The SC recommended that the MoP task the SC with developing a fisheries summary for common mora (*Mora moro*), given the relative importance of the fishery and noting that catch of this species was greater than the catch of some of the species for which fisheries summaries have been prepared, and the associated bycatch of Portuguese dogfish.

Agenda item 4 – Bottom fishing footprint

Agenda item 4.1. Updates to the bottom fishing footprint

86. The Science Officer presented SC-08-23, which provided an updated SIOFA bottom fishing footprint. During PAEWG4, the SIOFA Secretariat presented a bottom fishing footprint, which was endorsed by both PAEWG4 and SC7. SC7 recommended that further checks be performed on the footprint, and that it be presented to MoP9. While performing these checks, discrepancies in the footprint were highlighted but could not be resolved in time, which led MoP9 to adopt the footprint as an interim footprint and recommend that further work be done to resolve the discrepancies. The paper is intended to provide SC8 with a full account of the data analysis and revision that led to an updated bottom fishing footprint, including resolving the discrepancies with national data and the removal of fishing operations that utilised gears that MoP9 considered not to be bottom fishing gears (midwater trawl and handline gears). The updated footprint has also been compared with the interim footprint, to present any relevant changes in area and position. The updated bottom fishing footprint was 6% larger than the interim footprint and shifted its spatial coverage compared to the interim footprint.
87. The SC reviewed and endorsed the updated bottom fishing footprint (SC-08-23-Rev1).
88. The SC noted that, compared to the interim footprint, there had been a shift in spatial coverage in the updated SIOFA bottom fishing footprint, but the overall area had not changed significantly.
89. The SC noted that the Secretariat has fully documented procedures for recreating the footprint.
90. The FAO introduced its [International Guidelines for the Management of Deep-sea Fisheries in the High Seas](#) as a useful resource for informing the SC's discussions on the spatial management of deep-sea fisheries, VME closures, existing bottom fishing areas, and new and exploratory fisheries, highlighting in particular paragraphs 23, 61, 63, and 65.
91. The FAO informed the SC that other RFMOs have typically adopted measures to define existing bottom fishing areas and the exploratory fishing protocol together and as part of a suite of measures that also includes VME encounter protocols.

Agenda item 4.2. Advice to the MoP

92. The SC recommended that the MoP adopt the updated bottom fishing footprint (SC-08-23-Rev1), which should supersede the interim footprint adopted at MoP9.
93. The SC recommended that the MoP instruct the Secretariat to be the repository of the footprint, to provide it to CCPs on a request-basis and to utilise it, if required, for compliance purposes. This should be accompanied by full documentation of the procedure for creating the footprint.
94. The SC recommended that the data layer of the footprint, along with the SIOFA Subareas, should be made available in the SIOFA Secretariat GitHub account (<https://github.com/SIOFASecretariat>).
95. The SC recommended the MoP consider the implications of the bottom fishing footprint once it is agreed, including for CMM 2020/01 ([Interim Management of Bottom Fishing](#)) and how new fishing should be considered.

Agenda item 5 – Data Access and Dissemination

Agenda item 5.1. Confidentiality of documents and data access

Agenda item 5.1.1. Classification system for Scientific Committee documents

Agenda item 5.1.2. Transparency and distribution of meeting documents

96. The SC Chair introduced SC-08-INFO-16, which provided the revised version of MoP-09-10 Transparency-and-distribution-of-documents based on the MoP's review and comments. He explained that this paper is intended to clarify how open public documents and restricted documents should be recorded so as to ensure data confidentiality rules are observed. It sets out a system for consultant reports to be submitted and reviewed within the Secretariat and externally by CCPs, and for those reports to be submitted to the SC afterwards.
97. The SC reviewed SC-08-INFO-16 and did not propose any amendments.
98. The SC requested the Secretariat to provide public summaries of the restricted papers of the previous SC meetings when time allows. It will help consultants and scientists to identify existing papers, and to ask for the release of those for their work.

Agenda item 5.1.3. Definition of public domain data

99. The SC Chair opened the discussion by recalling paragraph 127 of the MoP9 Report, which requested the advice of the SC regarding the definition of "public domain data" and "public domain catch and effort data". Paragraph 127 of the MoP9 report was
 - i. Is the current definition of 'public domain data' and 'public domain catch and effort data' appropriate for public information, or could it be reduced to a finer scale (e.g., 1x1 degrees) providing it is not possible to identify a single set?
 - ii. Is there merit in displaying finer levels of stratification, economic information with different controls – for example, different limitations on who can access papers that display finer scale data, where it is publicized or where it is discussed (open/closed sessions). What would the appropriate classifications be in this regard?
 - iii. Can economic information at the country-level be displayed provided it doesn't identify an individual company or other proprietary information?
 - iv. What does the SC need to do with finer-scale data displayed in its Working Papers and Information Papers?
 - v. What problems, if any, has the SC or its observers encountered in terms of accessing SC papers or in the presentation and display of data in its papers?
100. With regard to paragraph 99(i), the SC noted that no changes are required on the definition of public domain catch and effort data. However, confidentiality rules about species reported only by one vessel prevents publicly displaying catch and effort data. In these cases, it was agreed that, when tabulating single species, total catches can be displayed as a three-year rolling average. In terms of the geographical resolution, finer scale data display (e.g., 1x1 degree resolution) was unlikely to be a problem for fisheries that operate on mobile fish stocks but not feasible for fisheries related with spatial features. The SC noted that data available to SIOFA that could be disseminated into the public domain in accordance with the current Conservation and Management Measure for Data Confidentiality and Procedures for access and use of data (Data Confidentiality) 2016/03 could follow the same approach as WCPFC, whereby a "trimmed" database is made available to the public domain.
101. With regard to paragraph 99(ii), the SC prepared the following table with data classifications and corresponding access and display rules.

Classification	Type of information or data	Access to documents	Website access	Display in open or closed session?
Tier 1: Public	Public domain data / public domain catch and effort data as defined in CMM 2016-03 Economic information at the country level	Open access	Publicly available on SIOFA website	Open session
Tier 2: Restricted	1x1 degrees and does not identify a single fishing event	CCPs, + Observers, External scientists (under conditions of confidentiality)	Abstract publicly available on SIOFA website. Document available on restricted section of SIOFA website	Open session

102. In preparing the above table, the SC assumed that economic information includes financial elements such as individual vessel financial (i.e., profit or loss) data. The SC recommended that for this type of economic information, any single vessel's financial data should be confidential. The SC noted that a 3-vessel rule could be used so that the economic information of a single vessel cannot be identified unless the data can be collated in a way that the specifics are obscured e.g., by summarising profit margins over a larger fleet.
103. With regard to paragraph 99(ii), the SC noted that economic information could be displayed at country level, provided it doesn't identify an individual vessel or other confidential information. The SC also noted that raw CPUE by fleet within a management area could be considered as an indicator of economic value. Therefore, the SC recommended that CPUE series should be scaled to a mean of 1 to avoid this.
104. With regard to paragraph 99(iv), the SC noted that under CMM 2016/03, finer-scale data is already available for scientific analysis. It is in relation to the display of that information that issues potentially arise. The SC noted that fine-scale data can only be included in plots and tables on any paper with the permission of the data owner(s), otherwise data would need to be presented in an aggregated form as per CMM 2016/03 (Data Confidentiality). Although this rule could differ by fishery, the SC noted that this does not preclude the possibility of finer-scale data being included in papers in specific cases if the authors have the permission of the data owner(s).
105. With regard to paragraph 99(v), the SC noted that there has not been any reported situation where observers could not access SC documents. Observers participating in SIOFA SC meetings have access to the meeting documents, including those that are restricted. Very rarely some documents are only shown in a closed session and in that case, they are only open to CCPs delegates. As such, SIOFA currently has appropriate rules and procedures in place.
106. The SC welcomed the initiative by the Secretariat to make abstracts of restricted papers publicly available this year. The SC requested the Secretariat make the abstracts for restricted papers from all previous Scientific Committee and scientific working groups meetings available on the public website. The SC noted that this also helps consultants contracted by SIOFA more easily identify which papers and information would aid their work.

107. The SC noted that, to promote further transparency and openness in the SC, if a paper does contain confidential information, the author(s) are encouraged to summarise it in a way that does not violate confidentiality rules so the paper can be displayed.
108. The SC noted that its members have always worked in an open and collaborative manner and encouraged them to continue to do so.

Agenda item 5.2. Other data access and dissemination issues

109. The Data Officer presented SC-08-INFO-13, which summarised the CCP data submission that was performed under the requirements of CMM 2022/02 (Data Standards). In 2022, eight CCPs provided data to the Secretariat for fishing activities performed in 2021. Most of the datasets received followed the requirements. The Secretariat will update the data submission templates to accommodate the changes in CMM 2022/02. The templates will be provided as usual several weeks before the next data submission deadline.
110. The SC noted that the quality of CCPs' data submissions has continued to improve each year.
111. The SC requested the Data Officer to review CMM 2022/02 (Data Standards), particularly Annex C, paragraph 2, and consider that the required resolution for catch and effort data coordinates should be degree-minute-second, rather than decimal degree, where the number of decimal digits is not reliable for accuracy.

Agenda item 5.2.1. Exchange of scientific toothfish data with CCAMLR

112. The Data Officer presented SC-08-INFO-10, which summarised the exchange of scientific toothfish data with the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR). In 2020-2021, Patagonian toothfish with tags were recaptured in the SIOFA Area. Most of these had been tagged in the CCAMLR Area. Information about the recaptured tags was sent to CCAMLR together with a corresponding data request. The requested data were sent to the SIOFA Secretariat following the data exchange protocol.
113. The SC requested that, in addition to the Overview of SIOFA fisheries, the Secretariat prepare a paper for future SC meetings with the number of tags released in the SIOFA Area, the number of tags recaptured with a breakdown by whether they were originally released in the SIOFA or CCAMLR Area, and the number of fish that moved between the two areas based on recaptured tags. The SC noted that this should be presented annually to the SC and requested the Secretariat also submit a version of that paper to the CCAMLR Scientific Committee.

Agenda item 5.2.2. Developments to the data section of the SIOFA website

114. The Data Officer explained that in response to requests from the SC and the MoP that SIOFA data be more transparent and accessible, the Secretariat has been developing a new data section with financial support from an EU funding agreement. The Data Officer provided a preview of the new section, which is currently only accessible by the Secretariat and the SC Chair. The section includes a data process flowchart showing how data are processed into the database, how data requests are made, and how data are released; and sub sections where allowed users can generate data reports on annual catch data, annual effort data and SIOFA data availability and resolution.
115. The SC noted the usefulness of the new section and encouraged the Secretariat and the SC Chair to continue to develop it and rigorously test it to ensure it upholds the SIOFA data confidentiality rules.
116. The SC suggested a number of potential improvements to the new section:

- i. When a user tries to generate data report that contains confidential data, the report should clearly indicate that the requested data exist but cannot be displayed for confidentiality reasons, rather than giving the impression that the data do not exist or are missing.
- ii. As a way to display catch and effort data from a fishery fished by only one vessel, while protecting the confidentiality of the data, these data could be aggregated across a longer period than one year.
- iii. Information about the spatial resolution of data should be provided on a fleet by fleet basis.
- iv. A number of standardised files should be made available, such as spatial shapefiles relevant to SIOFA. These files should also be made available on the SIOFA Secretariat GitHub page (<https://github.com/SIOFASecretariat>), with spatial layers being accompanied by simple example code.

Agenda item 5.2.3. The SIOFA standard operating procedure for data use and data requests

117. The Data Officer presented SC-08-INFO-12, which described the SIOFA standard operating procedure for data use and data requests as adopted by the MoP.
118. The SC reviewed the procedure and proposed amendments to it as outlined in **Annex E** to address instances where a data owner is not a CCP, and suggested that the same process be followed for non-CCPs. The SC recommended that the MoP adopt the proposed amendments.
119. The SC requested that the Secretariat prepare a report to be presented to future SC meetings recording all data requests that relate to scientific activities and the outcomes thereof.

Agenda item 6 – Stock assessments and advice

Agenda item 6.1. Orange roughy

Agenda item 6.1.1. Descriptive characterisation

120. The SC noted that trends in the raw CPUE data and unscaled length-frequency data for orange roughy did not suggest any reason for concern. The SC also noted that catch has been low over the past three years with one of the two vessels in this fishery experiencing mechanical problems during this period. One vessel withdrew from the fishery in November 2022.

Agenda item 6.1.2. Stock monitoring and data collection

121. The SC recalled that SC7 recommended using sex-structured stock assessment models and sex-specific age frequencies for the stock assessment update if appropriate and noted that it would be necessary to age adequate samples of otoliths from male and female fish and from Walter's Shoal and the Southwestern Rise to do so.
122. The SC noted that if otoliths are to be used for developing age-frequency distributions, they need to have been sampled in a way that is representative of the stock. The SC agreed that if there are any plans to change the otolith sampling protocols, they should be presented to the SC for approval.
123. The SC noted that it is possible the otolith aging work may not be completed in time for SC9 and that the SC may only be able to review the age data when it is presented as part of the stock assessment results at SC10.
124. The SC noted that acoustic surveys for orange roughy continue to be conducted.

125. The SC noted that a stock structure analysis of orange roughy, including design of a potential genetic survey, is ongoing and that the results of the initial project are expected this year, but the genetic analysis is unlikely to have been completed in time for the next assessment.

Agenda item 6.1.3. Stock assessment

126. The SC recalled that a stock assessment was conducted in 2022, but that its results were not accepted for management advice. The SC noted that the next stock assessment was scheduled for 2027, but as a precautionary measure the stock assessment for orange roughy has been rescheduled for 2025 by the MoP.
127. The SC formed a technical sub-committee for providing advice on the orange roughy stock assessment, comprising the SC Chair, Dr Sebastián Rodríguez Alfaro (EU), the Science Officer, Dr Stephen Brouwer (Cook Islands), Dr Jules Selles (France (Overseas Territories)) and Mr Charles Heaphy (SIODFA).
128. The SC projects relevant to conducting the stock assessment update (otolith ageing, acoustic survey, stock structure, stock assessment) and corresponding budgets are included in the SC workplan (**Annex F**).

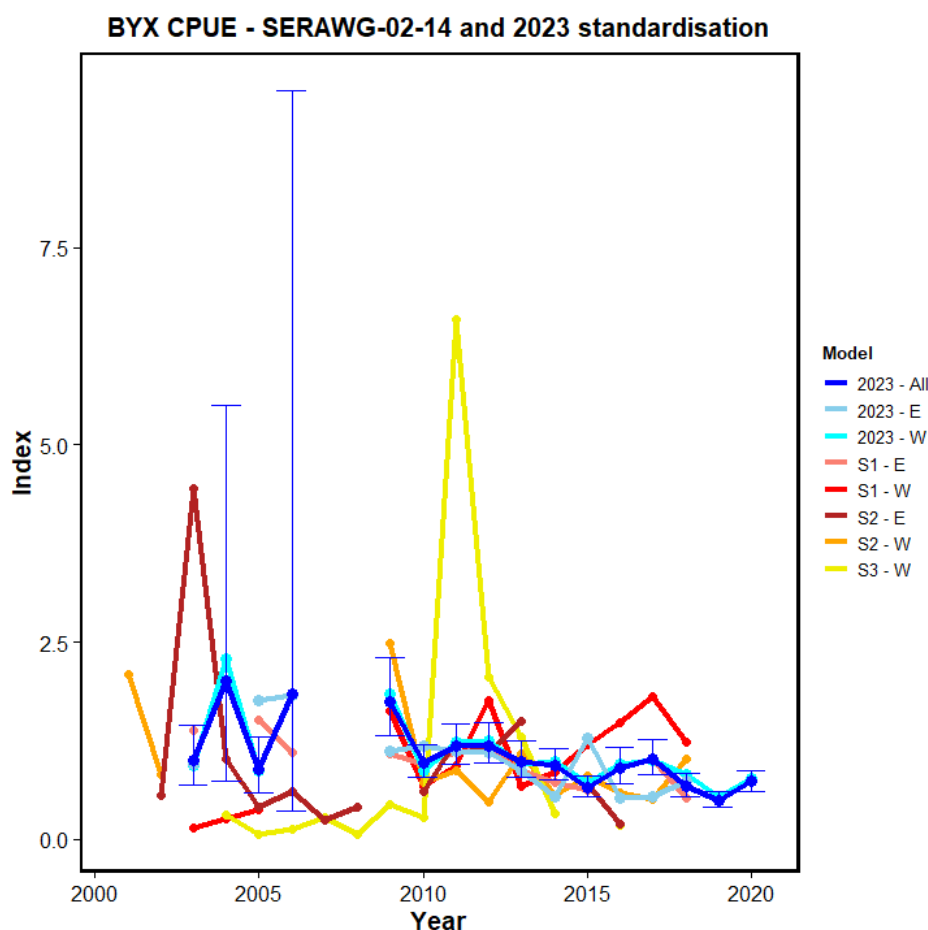
Agenda item 6.1.4. Updates to the fisheries summary

129. The SC reviewed and further updated the SIOFA fishery summary for orange roughy (SC-08-16-Rev1). The SC recommended that the MoP endorse the fishery summary for orange roughy and make a public version of it, with confidential information removed, available on the SIOFA website.

Agenda item 6.2. Alfonsino

Agenda item 6.2.1. Descriptive characterisation

130. The SC noted that analysis of catch and standardised CPUE indices for alfonsino indicate that, provided CPUE is reflective of trends in abundance (figure 1), the stock is fluctuating without trend in recent years.

Figure 1**Agenda item 6.2.2. Stock monitoring and data collection**

131. The SC noted that a sampling design to collect genetic samples to investigate stock structure is ongoing.
132. The SC noted that a project to validate the alfonsino age estimates using bomb radiocarbon is ongoing.
133. The SC noted that one of the issues in the previous stock assessment was that an insufficient number of otoliths from the “East” fishery were aged. The SC noted the importance of ensuring an adequate number of otoliths from this fishery are aged for the next stock assessment.
134. The SC noted that otolith sampling protocols on the Cook Island vessels has been amended to double the samples from areas where otoliths are lacking.
135. The SC noted that it may be possible to develop CPUE indices for juveniles and for adults separately. The SC noted that the CPUE standardisations should consider the impact of excluding zero catch sets.

Agenda item 6.2.2.1. Alfonsino acoustics

136. The SC noted that there remains uncertainty about the feasibility of acoustic surveys for alfonsino. The SC recommended continuing with the planned experimental studies to explore the feasibility of acoustic surveys.

Agenda item 6.2.3. Stock assessment

137. The SC noted that the next alfonsino stock assessment is scheduled for 2026.

138. The SC formed a technical sub-committee for providing advice on the alfonsino assessment, comprising the SC Chair, an SC Vice-Chair, the Science Officer, Dr Takehiro Okuda (Japan), Dr Stephen Brouwer (Cook Islands) and Mr Charles Heaphy (SIOFA).
139. The SC projects (stock structure, otolith aging and age validation with bomb radiocarbon analysis, acoustics) relevant to conducting the next stock assessment and corresponding budgets are included in the SC workplan (**Annex F**).

Agenda item 6.2.4. Updates to the fisheries summary

140. The SC reviewed the 2023 SIOFA fishery summary for alfonsino (SC-08-17). The SC agreed to continue to refine this fishery summary.

Agenda item 6.3. Toothfish

Agenda item 6.3.1. Descriptive characterisation

141. The SC noted that over the last two years, the majority of toothfish has been taken in an area not subject to catch limits outside the Del Cano Rise and William's Ridge management areas.
142. The SC agreed to work on the spatial definition of a new management area to encompass the catch made outside the two defined management areas.

Agenda item 6.3.2. Stock monitoring and data collection

143. The SC noted the current requirements for data collected by Scientific Observers are given in CMM 2022/02 (Data Standards) (Annex B) and recommended that observers in toothfish fisheries aim to:
 - i. biologically sample at least 35 toothfish on each haul,
 - ii. measure a representative sample of at least 10 fish per species of all bycatch for length and weight,
 - iii. extract 10 pairs of toothfish otoliths per 5 cm total length class per trip
144. The SC noted that there was sometimes only one Scientific Observer onboard longline vessels targeting toothfish in the SIOFA Area, and that the tagging of toothfish can take up a significant part of the Scientific Observer's workload.
145. The SC recommended that ageing of TOP otoliths be undertaken to estimate the growth curves for TOP on Del Cano Rise, and that to improve the data available for this estimation, otoliths be collected comprising all size classes.
146. The SC recommended the collection of tissue samples for genetic studies to discriminate between fish stocks.
147. The SC agreed to develop a CPUE by analogy assessment of Del Cano Rise and the South Indian Ridge.
148. The SC agreed to consider how CCAMLR trend analysis rules (https://fishdocs.ccamlr.org/TrendAnalysis_2020.pdf) might be applied in the SIOFA Area, including the South Indian Ridge.
149. The SC noted that the South Indian Ridge may be linked to Del Cano Rise and that the two areas should receive similar management. The SC suggested that initially the two areas be considered as separate areas and possibly combined later if the data suggests they are linked.
150. The SC discussed the possibility of harmonising the management regimes of Del Cano Rise and Williams Ridge, with the objectives being to prevent concentration of effort, ensuring tagging distribution, and avoiding local stock depletion. The SC suggested that such a regime could also be applied to the new management area.

Agenda item 6.3.3. Stock assessment

151. The SC noted that development of trend analysis rules for management of toothfish should be presented at SC9, under TOT-2023-01.
152. The SC formed a technical sub-committee for providing advice on the toothfish stock assessment, comprising the SC Chair, an SC Vice-Chair, the Science Officer, Mr Roberto Sarralde Vizuite (EU), Mr Trent Timmiss (Australia), and Dr Jules Selles (France (Overseas Territories)).
153. The SC projects (stock structure, population spatial structure) relevant to conducting the next stock assessment and corresponding budgets are included in the SC workplan (**Annex F**).
154. The SC recommended that the MoP consider management regulations for the areas outside Del Cano Rise and Williams Ridge as the bulk of the catch is currently coming from an area that is outside these areas and that is not subject to catch limits.
155. The SC recommended the establishment of a new management area (South Indian Ridge (SIR)) and the extension of Del Cano Rise (DCR) management to the northeast as defined below.
DCR: The area that is:
 - (i) north of 45°00' S, and
 - (ii) south of 44°00' S when west of 44°09' E, and
 - (iii) south of 43°30' S when east of 44°09' E, and
 - (iv) between the adjacent EEZs to the east and west.

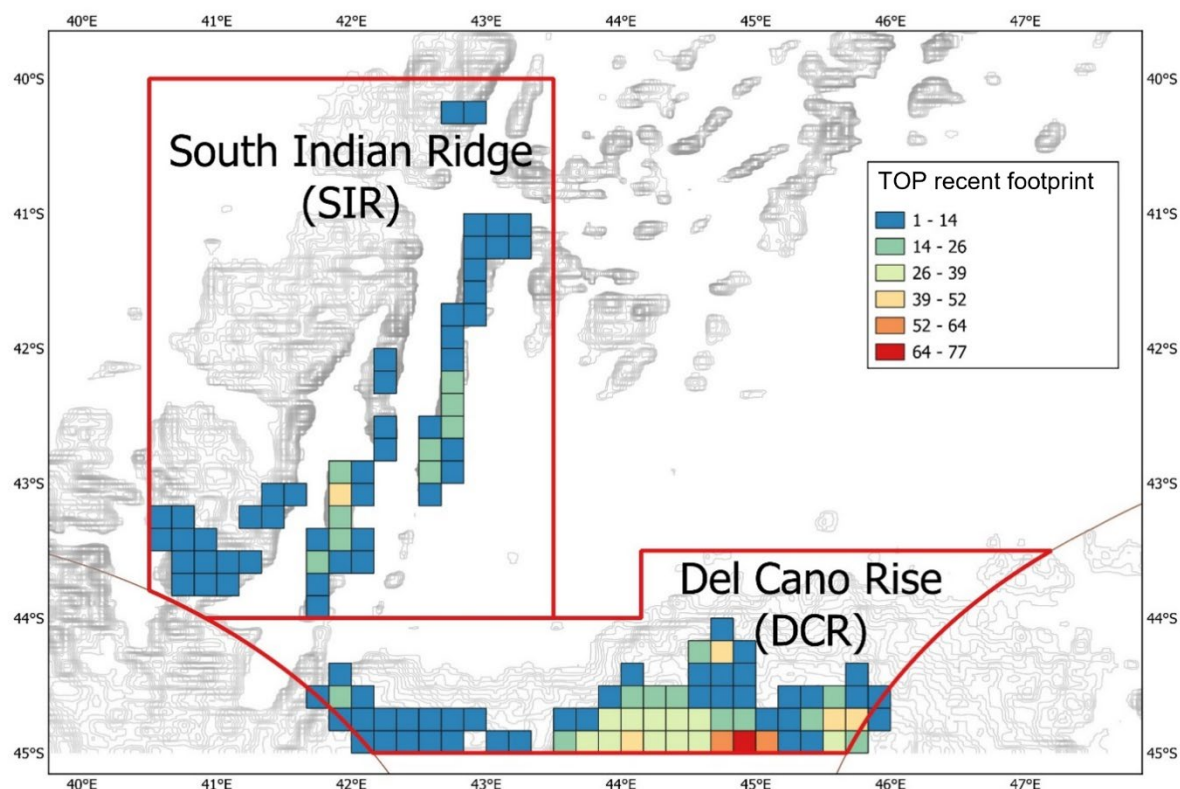
SIR: The area bounded within the box defined in Table 1;

Table 1: The South Indian Ridge (SIR) area

Latitude	Longitude
40°00' S	43°30' E
44°00' S	43°30' E
44°00' S	40°55' E
43°47.2' S	40°30' E
40°00' S	40°30' E

Shown in Figure 2, with the recent fishing footprint.

Figure 2: SIR and extended DCR with recent fishing footprint
(colours indicate the number of sets in each square)



Agenda item 6.3.4. Updates to the fisheries summary

156. The SC reviewed and further updated the 2023 SIOFA fishery summary for toothfish (SC-08-18-Rev1). The SC agreed to continue to refine this fishery summary.

Agenda item 6.4. Oilfish

Agenda item 6.4.1. Descriptive characterisation

157. The SC noted that the fisheries summary for oil fish and escolar suggested that there had been a decline in catch rates up to 2021 but that the CPUE data in Chinese Taipei's national report, although it mirrored the trend of the fisheries summary, had an additional year of data that suggested that CPUE was more likely to be interpreted as fluctuating over time. The SC noted that the recent decline in CPUE may be due to a redirection of effort to other species in recent years.

Agenda item 6.4.2. Stock monitoring and data collection

158. Chinese Taipei agreed to estimate a standardised CPUE index and to provide a paper about oilfish for the next SC.
159. The SC Chair noted that this work should be included in the SC workplan, together with budget estimates if needed.

Agenda item 6.4.3. Stock assessment

160. The SC agreed to encourage the collection of length frequency data and develop standardised CPUE indices for oilfish and escolar from target fisheries towards conducting a stock assessment for these species in the future.

Agenda item 6.4.4. Updates to the fisheries summary

161. The SC reviewed and further updated the 2023 SIOFA fishery summary for oil fish and escolar (SC-08-19-Rev1). The SC agreed to continue to refine this fishery summary.

Agenda item 6.5. Other species

162. The SC noted the value of developing a fishery summary for common mora (*Mora moro*) particularly linked with the associated retained bycatch of Portuguese dogfish (*Centroscymnus coelolepis*).

Agenda item 6.6. Harvest strategies

Agenda item 6.6.1. Report of the Joint MoP-SC Harvest Strategies Workshop (WS2023-HSPA)

163. Agenda item 6.6 was chaired by the SC Vice-Chair.
164. The SC Vice-Chair presented the report of the Joint MoP-SC Harvest Strategies Workshop (SC-08-31-Rev1).
165. The SC reviewed the Workshop report and its recommendations.
166. The SC endorsed the recommendation in paragraph 15 of the Workshop report that the MoP consider establishing a process for regular dialogue between the MoP and the SC for the development of harvest strategies, held in conjunction with either the MoP or SC meetings.
167. The SC considered paragraphs 17, 53 and 54 of the Workshop report, regarding data collection and monitoring programmes, together. The SC noted that appropriate monitoring programmes are currently in place for the three main demersal SIOFA target stocks, namely collection of aging data and acoustic surveys for orange roughy, CPUE calculations and collection of aging data for alfonsino, and tag-based estimates for toothfish.
168. The SC noted that one area of improvement could be the addition of alfonsino acoustic surveys, if they are found to be feasible for providing indices of abundance.
169. With regard to the orange roughy acoustic surveys, the SC requested the Cook Islands to present its protocol to the SC so that it can serve as a standard SIOFA protocol for others that may wish to participate in such surveys. It was suggested that this be tabled as an appendix to the next acoustic survey analysis.
170. The SC discussed the value of collecting enough otoliths at the appropriate spatio-temporal resolution for orange roughy and toothfish, while noting that this may not always be possible due to practical constraints. This work would be needed for estimating age-frequency in the case of orange roughy. In the case of toothfish, it would be needed for constructing a growth curve for comparison with the growth curve of toothfish in the CCAMLR area with which they are potentially part of a straddling stock. It would also be needed for developing an age-frequency distribution for studies such as estimating the vulnerable biomass selectivity.
171. The SC endorsed the recommendation in paragraph 31 of the Workshop report that the MoP request the advice of the SC on additional SIOFA species that would be amenable to the development of monitoring programmes and harvest strategies.
172. The SC noted that to avoid potential delays in the development of monitoring programmes and harvest strategies for additional species, it may be useful to begin collecting biological data or to collect more biological data for these species. Portuguese dogfish is one such species, and the SC encouraged the EU to collect some vertebrae and fin spines as aging material for Portuguese dogfish, if possible, in addition to the biological data it is already collecting.

173. The SC endorsed the recommendations in paragraph 32 of the Workshop report that the MoP consider recommending the development of harvest strategies for orange roughy and toothfish as a first step, but also consider the development of harvest strategies for alfonsino and other primary SIOFA species.
174. The SC considered the order in which to develop the harvest strategies for orange roughy and toothfish. The SC noted that it may be able to participate in the work being done by CCAMLR to develop an MSE for data-limited toothfish stocks, which would afford it the capacity to work on the harvest strategy for toothfish and orange roughy in parallel. In this way, the SC would be able to develop the harvest strategies for both stocks concurrently rather than sequentially.
175. The SC considered paragraphs 37 and 57 of the Workshop report and endorsed and elaborated on the recommendations in those paragraphs.
176. The SC recommended that the MoP adopt interim stock-specific reference points for orange roughy (all assessment units) and alfonsino (all stocks) as follows (with B_0 denoting pre-exploitation spawning stock biomass): Target = B_{MSY} using a proxy of $= 0.4 \cdot B_0$, and a Limit = $0.2 \cdot B_0$ (common surrogates used in other regions) with a probability of being above the target at least 50% of the time, and a probability of being above the limit of at least 90% of the time. The SC recommended that the MoP note that the proxies for MSY have been proposed for operationalising target reference points based on the assumption that the assessment methods would calculate depletion better than MSY, but that other equivalent operational targets may be appropriate depending on the assessment method used.
177. The SC recommended that the MoP adopt interim stock-specific reference points for toothfish (all management units) as follows (with B_0 denoting pre-exploitation spawning stock biomass): Target = $0.5 \cdot B_0$, and Limit = $0.2 \cdot B_0$ with a probability of being above the target at least 50% of the time, and a probability of being above the limit of at least 90% of the time. The SC noted that the toothfish stocks in Williams Ridge and Del Cano Rise are likely to be part of a straddling stock with toothfish in the CCAMLR area and recommended that the MoP note the need to ensure alignment with the CCAMLR decision rules when operationalising the above interim reference points.
178. The SC recommended that the MoP adopt the following candidate Harvest Control Rules (HCRs) as interim management for the above stocks and as management for all other stocks:
- Maintain catches at present levels (unless there is evidence of a marked downward trend in the resource) until sufficient further informative data becomes available for meaningful improvements to the existing assessments. Where not previously defined for specific stocks, the SC recommends the present level be defined as the average (mean) of the 5 year period 2018–2022. For orange roughy, SC7 agreed that recent levels referred to the average of the last six years of that assessment (2015–2020).
 - Implementing an $F_{status-quo}$ harvest strategy, which varies catches up or down in proportion to the results from continued collection of some measure or index of abundance.
 - Implementing a harvest strategy based primarily on some multiple of a proxy value of F_{MSY} or B_{MSY} , while noting that other proxies or proxy values may be appropriate for some stocks, for instance those in the CCAMLR decision rules for toothfish.
179. Regarding paragraph 38 of the Workshop report, the SC recommended that the MoP request that SC9 hold discussions on the development of generalised approaches for

stock maintenance and rebuilding approaches (if needed) and present the outcomes of its discussions to MoP11.

180. The SC endorsed the recommendation in paragraph 41 of the Workshop report that the MoP consider additional objectives such as bycatch, fisheries impacts, benthic impacts, etc., as part of its harvest strategies, and that the SC be requested to provide advice to the MoP based on the objectives set by the MoP.
181. As recommended in paragraph 42 of the Workshop report, the SC agreed to conduct a review, and compile and summarise the proxies used by other jurisdictions for the primary species caught in the SIOFA Area.
182. The SC endorsed the process for the setting of management objectives recommended in paragraph 43 of the Workshop as follows:
 - i. As a first step, the Meeting of the Parties (MoP) proposes potential management objectives in generic terms and, if possible, specific for each species and their stocks.
 - ii. The SC develops potential performance indices based on the management objectives proposed by the MoP.
 - iii. The SC identifies any objectives that are incompatible with each other and where trade-offs would need to be considered.
 - iv. The MoP considers the performance indices recommended by the SC, and identifies those to adopt, and which should be excluded or further refined by the SC.
183. The SC endorsed the recommendation in paragraph 45 of the Workshop report that the SC consider a wide range of options for stock monitoring programmes; prepare a table (e.g., as shown in Table 2), with the scientific uncertainty, relative costs, and applicability by stock/fishery of the various options; and present this to the MoP for the MoP to decide on the appropriate monitoring programme for each stock.

Table 2 The scientific uncertainty, relative costs, and applicability by stock/fishery of the various options for stock monitoring programmes

ITEMS	COST (High/ Med/ Low)	USABILITY/ UNCERTAINTY	APPLICABILITY BY STOCK/FISHERY			AVAILABILITY OF DATA FROM OTHER JURISDICTIONS		
			BYS	ORY	TOP	BYS	ORY	TOP
<i>Biomass indices</i>								
• Randomised bottom trawl								
• Acoustic surveys of fish aggregations								
• Tagging								
• Standardised commercial CPUE timeseries								
• Plankton survey								
<i>Fish size (length, weight) or age</i>								
• Average size (age)								
• Proportion below a threshold								
• Proportion above a threshold								
<i>Oceanographic parameters</i>								

184. The SC recommended that the MoP note that Table 2 is only an example that has been included for illustration purposes and that the specific rows and species will likely differ following the SC's discussions and scientific evaluations at SC9.
185. The SC endorsed the recommendation in paragraph 48 of the Workshop report that the MoP request the SC evaluate the different stock assessment options, based on the level of data available, for all species that were potential candidates for harvest strategies.
186. The SC endorsed the recommendation in paragraph 55 of the Workshop report that the MoP request the SC determine potential performance indicators for each of the management objectives once the MoP has decided on the management objectives.
187. Regarding paragraph 56 of the Workshop report, the SC endorsed the approach for the development of harvest strategies and the timeline for the implementation of pre-assessments, assessments, management objectives and implementation of harvest strategies proposed by the Workshop (**Annex G**). The SC noted that ecosystem considerations under Step 1.1 Specify management objectives could include bycatch and benthic impacts. The SC noted that Step 4.2. Adopt appropriate harvest strategy and Step 5.1. Implement management changes based on HCR should happen in the

- same year and recommended that the MoP begin preparations, which may take several years, for Step 5.1., to minimize the delay between the two steps.
188. The SC endorsed the recommendation in paragraph 58 of the Workshop report that the SC, at its 2026 meeting, aim to formally propose final Harvest Strategies to the MoP. The SC noted that if adopted by the MoP in 2026, the Harvest Strategy could be used for formulating the SC's scientific advice from 2027.
 189. Regarding paragraph 59 of the Workshop report, the SC noted that the proposed timeline for the implementation of pre-assessments, assessments, management objectives and implementation of harvest strategies should include responses to exceptional circumstances, such as dropout or breakout rules as mentioned in paragraph 51 of the Workshop report, and recommended that the MoP consider what such responses might be.
 190. The SC noted that the harvest strategies developed should be designed to be robust to the effects of climate change and changes in productivity.
 191. The SC noted that oceanographic conditions might be relevant to harvest strategies in some instances.
 192. Regarding paragraph 60 of the Workshop report, the SC endorsed the request that CCPs consider the timeline and provide advice to the SC and MoP on contributions they are intending to make to facilitate the development of harvest strategies.
 193. Regarding paragraphs 61 and 62 of the Workshop report, the SC noted the importance of regular dialogue between the MoP and the SC to ensure smooth and timely progress in accordance with the timeline, and endorsed the recommendation that a one or two-day joint MoP-SC workshop on harvest strategy pre-assessment be held in 2024. As for the timing, the SC requested that the MoP consider whether the workshop should be held immediately preceding SC9 or immediately preceding MoP11, noting that the latter may facilitate greater participation by managers.
 194. The SC developed draft objectives and Terms of Reference for the joint MoP-SC workshop on harvest strategy pre-assessment and recommended that the MoP consider them for adoption (**Annex H**).
 195. The SC noted paragraph 63 of the Workshop report and endorsed the recommendation that the SC develop a pre-assessment summary and make it available for the joint MoP-SC workshop in 2024.
 196. The SC endorsed the recommendation in paragraph 65 of the Workshop report that the MoP consider an agenda item on harvest strategies at its annual meeting this year and consider, as part of that, inviting the Pacific Community (SPC) or other experts to give an overview of harvest strategies and appropriate software tools (such as the SPC AMPLE Shiny App or other similar HCR tool). The SC believed that such a demonstration could be beneficial for the MoP and tasked SC Chair to liaise with the MoP Chair about this matter.
 197. The SC endorsed the recommendation in paragraph 67 of the Workshop report that the MoP consider requesting the SC to develop interim ad-hoc harvest control rules that could be used for managing stocks, including for example, harvest control rules that adjust any future catch limits based on trends in CPUE or other stock status indicators.
 198. The SC reaffirmed the usefulness of the Workshop as a forum for discussion between managers and scientists and welcomed its outcomes and recommendations.

Agenda item 6.7. Advice to the MoP

199. The SC recommended that, for the primary SIOFA target species, the MoP require CCPs to include in their national reports nominal CPUE data for these species, to enable the identification of potential trend in years when no assessment is being undertaken.
200. The SC encouraged CCPs working in fisheries for which a stock assessment is due to be conducted to give updates to the SC immediately prior to the stock assessment to confirm that the necessary data are available and being collected in the appropriate way.
201. The SC recommended that the MoP endorse a stock assessment schedule whereby only one of the three main SIOFA target stocks are subject to a stock assessment in any given year. The SC recommended that in years where no stock assessments of the abovementioned stocks are being conducted, the MoP task the SC with conducting stock assessments for other species as required.
202. The SC noted the following technical errors in CMM 2021/15 (Management of Demersal Stocks) and recommended that the MoP amend them:
 - i. Different coordinates are given for the boundary for Williams Ridge in footnote 2 of paragraph 7b and in Table 2.
 - ii. Table 1 is incorrectly labelled as Table 2.
203. The SC noted that paragraph 18 of CMM 2021/15 (Management of Demersal Stocks), which is intended to ensure spatial distribution of tagging (MoP6 report, paragraph 93), does not specify a time period, i.e. set, trip or season, which may cause confusion in implementation, and recommended that the MoP clarify the appropriate time period.

Agenda item 7 – Bycatch

Agenda item 7.1. Definition of bycatch

204. The SC reviewed and proposed refinements to the interim definitions of primary, secondary and endangered, threatened and protected (ETP) species that it previously developed to prioritise species for work.
205. The SC recalled that, for the purposes of this work, according to the SC7 report paragraph 176, SC8 was requested to distinguish between fishery resources, not bycatch more broadly (e.g. incidental catch of ETP and VME species). SC8 was tasked with defining fish resource groups as target and bycatch and consider the interim definitions developed at SC7 of ETP, primary and secondary species for the purpose of prioritising work. The SC noted that this would not preclude the SC undertaking work on species that do not fall into the categories primary and secondary should that be necessary.
206. The SC recommended that the MoP adopt the revised interim definitions as follows:
 - a. *Primary species: Species for which management tools and measures should be in place and the achievement of stock management objectives is expected.* These species-gear encounters tend to encompass a high proportion of the fished area for that fishery. The Scientific Committee would be expected to undertake relevant biological studies and periodic stock assessments (quantitative, semi-quantitative or qualitative whichever is appropriate) for these species. These species should have SIOFA species specific fisheries

summary reports compiled annually in years when no assessment is being undertaken.

- b. *Secondary species: All other species that comprise 5 per cent or more of the total catch (determined using a 3-5 year average) or, for 'less resilient' species (most sharks etc., based on ERA), 2 per cent or more of the total catch, or otherwise as designated by the Scientific Committee.* The Scientific Committee would be expected to undertake periodic evaluations, to assess trends in catch and effort, for these species. Information on trends for these species could be included in a future general fishery summary report.
- c. *Endangered, Threatened or Protected (ETP species): All reptiles, birds, and mammals, as well as any species listed as endangered, threatened or protected by a CCP's national legislation, international agreements, or relevant international instruments (e.g., IUCN Red List as vulnerable, endangered or critically endangered) once designated by SIOFA.* The Scientific Committee would be expected to undertake catch and impact evaluations, on the incidental catch of these species from time to time or undertake risk-based analyses. Information on trends for these species should be included in general ETP species summary report.

207. The SC recommended that the MoP adopt the following definitions for SIOFA use for SC planning and prioritisation:

- a. **Target:** Target species are declared by the skipper in logbook catch returns as required in Annex A of CMM 2022/02.
- b. **Targeted species:** the intended catch and other valuable species landed in sets aimed at the intended catch. These species usually consist of 50% or more of the species composition of the retained catch, but in some highly diverse fisheries (e.g., shallow water tropical fisheries) these may make up as little as 15% of the retained catch. Targeted species are usually landed in consecutive sets within a trip, where there may be more than one intended target, and as such are not limited to those listed on set and haul declarations. Targeted species that are damaged or of an undesirable size are, from time to time, discarded by some vessels.
- c. **Bycatch:** Fishery resources that are not target nor targeted typically in the taxonomic classes Chondrichthyes and Actinopterygii and infraphylum Agnatha and class Cephalopoda and Crustacea, that are part of the catch which is not the target.
 - 1. **Retained bycatch:** Species that are less valuable than the target species and often caught and retained, or retained often but in low proportions and have commercial value.
 - 2. **Discarded bycatch:** Unwanted species that have little or no commercial value and are usually discarded. Species that are not allowed to be retained.

208. The SC noted that some species can be a target species in one fishery and discarded bycatch in another, and, as such, recommended that each fishery should be considered separately.

209. The SC grouped species as nominated by CCPs (at SC8) for their fisheries and included them in **Annex I**. The SC8 recommended that the MoP note that the species categorisations listed in **Annex I** are preliminary and are likely to be updated by SC as it prioritises its workplan. Species not nominated could be categorised using catch information at the set level, from the most recent three years data, using the following principles:

- a. **Retained bycatch**

1. Never more than 50% of retained catch in more than 50% of sets in a trip; and/or
 2. Constitute 25% or less of the catch in 25% or less of sets by a vessel. But for highly diverse fisheries such as tropical shallow water trawl and line fisheries this level can be set at 5%.
- b. Discarded bycatch
1. Discarded/released species of low economic value;
 - o Can be caught often or infrequently but discarded more than 60% of the time when they are caught by most (60%+) vessels.
 2. Discarded/released species which may or may not have economic value, but no targeting or retention is allowed (by SIOFA or CCP).

Agenda item 7.2. Deepwater chondrichthyans

210. Australia presented SC-08-29, which provided an update on the ecological risk assessment (ERA) of deepwater chondrichthyan species that was last presented at the second meeting of the Stock Assessment and Ecological Risk Assessment Working Group (SERAWG) in March 2020 (See SERAWG-02-10). The updated assessment uses Productivity Susceptibility Analysis (PSA) and Sustainability Assessment for Fishing Effects (SAFE) to assess the risk of chondrichthyans to demersal trawl, midwater trawl, "shallow demersal trawl" (Saya de Malha bank fishery), demersal longline and pelagic longline gears (targeting oilfish) in SIOFA fisheries.
211. The chondrichthyan species list is identical to that which was used previously at the time of the 2018 ERA and was developed using logbook information from annual reports submitted by SIOFA Contracting Parties. The vertical and horizontal overlap was updated based on new fishing effort data from 2015 to 2019. Species distribution data was collated from multiple mapping sources (AquaMaps, FAO GeoNetwork and IUCN) with the sensitivity of the risk scores to data from each of these mapping sources also assessed. Life history attribute data was sourced from the CSIRO database that underpins the CSIRO ERA online tool and was available for most species with updates made to the database in the intervening period.
212. A greater number of false positives (i.e., results where low or medium risk species are assessed as high risk) in the PSA is to be expected due to the precautionary manner in which PSA scores attributes and deals with missing data. SAFE is a much more reliable tool for situations where good quality and coverage of effort data are available and there is a high level of confidence around the species distribution data used in the assessment. Several species were classified as either at high or extreme risk according to SAFE, including some deepwater shark species that are still reported as retained in large numbers in the SIOFA area, including *Dalatias licha* in the demersal longline fishery. The choice of mapping source (AquaMaps, FAO GeoNetwork and IUCN) had a significant effect on the risk score of chondrichthyan species in SAFE across all five fisheries and therefore any assessment of overall species-level risk and the effectiveness of conservation and management measures within the SIOFA Area must consider the underlying reliability of predicted distributions from these mapping sources. Consequently, it is recommended that further investigation is undertaken into the different mapping sources to determine which of these provides the most accurate representation of distribution for the different deepwater chondrichthyans in the SIOFA Area.
213. In response to a request from the deepwater sharks workshop, Australia provided further details about the methods behind the three mapping sources used in the updated ERA. The FAO GeoNetwork map distributions are based on the FAO Catalogues of Species combined with global databases. The information is derived from the direct knowledge of experts and different FAO sources of information. The

IUCN Red List's 'limits of distribution' are determined by using known occurrences of the taxon, along with expert knowledge of its ecological requirements, including habitat, elevation limits, and range. AquaMaps is based on predictions derived from occurrence records available through the Global Biodiversity Information Facility, supplemented by additional info obtained through online species databases (e.g., FishBase and SeaLifeBase), as well as expert knowledge.

214. The SC welcomed the updated chondrichthyan ERA following the provision of new catch and effort data for the period 2015-2019 and thanked Australia for conducting this work.
215. The SC noted that minor revisions have been made to the methodology, but improved distribution data in 2022 allowed comparison of individual species risk rankings across various mapping sources (AquaMaps, FAO GeoNetwork and IUCN).
216. The SC noted that several chondrichthyan species were classified as either at high or extreme risk in SAFE across SIOFA fisheries with some of these species (e.g., *Dalatias licha*) still reported as retained in large numbers in the SIOFA Area.
217. The SC noted that the choice of mapping source (AquaMaps, FAO GeoNetwork and IUCN) had a significant effect on the species assessed at high or extreme risk in each fishery, and therefore, the choice of distribution mapping source has a major influence on assessment of overall species-level risk.
218. The SC noted the need to further investigate the methods used by the different mapping sources to assess the underlying reliability of their predicted distributions and subsequently, what the most appropriate mapping source for deepwater chondrichthyans is in the SIOFA Area.
219. The SC agreed to conduct future updates to Australia's chondrichthyan ERAs using solely the SAFE tool given that SAFE is a more quantitative approach that reduces the likelihood of false positives and difficulties in determining "risk equivalence" as in the PSA, without precluding other studies from being conducted with other methodologies.
220. The SC encouraged Australia to continue to develop its chondrichthyan ERA work and noted that an update in the next 3 to 5 years would be beneficial to the work of the SC.
221. SIODFA introduced information papers SC-08-INFO-01 and SC-08-INFO-02 and explained its plans to develop more user-friendly shark-species identification and data/specimen collection guides, as well as to have Mr Paul Clerkin, a shark taxonomy expert, collect data and analyse deep-sea shark bycatch from a fishing trip in 2024.
222. The SC welcomed the planned work and invited the Executive Secretary to write a letter of support to the United States National Science Foundation (NSF) for the proposed study on behalf of the SC. The SC requested that ageing material (fin spines and vertebrae) be collected for Portuguese dogfish (*Centroscymnus coelolepis*) as part of this work using a stratified sampling design while prioritising samples from individuals larger than 90 cm, which tend to be missed by the longline fishery.
223. The SC noted the importance of ensuring compatibility between the data collected by the proposed study and that currently being collected by the EU and suggested that there would be value in combining the two datasets for a single population analysis. The EU offered to share its data sampling protocol with SIODFA to facilitate this and the SC thanked the EU for doing so.

Agenda item 7.2.1. Report of the Intersessional Workshop on Deepwater Sharks in SIOFA Area (WS2023-DWS)

Agenda item 7.2.2. Review of progress against CMM 2022/12 (Sharks), including development of precautionary bycatch limits

224. The SC Chair presented the report of the deepwater sharks workshop (SC-08-32).

225. The SC reviewed the deepwater sharks workshop report and its recommendations.
226. The SC noted paragraphs 36 and 71 of the deepwater sharks workshop report regarding data quantity and quality, and access and standards and held further discussions under agenda item 9.
227. The SC noted the recommendations under paragraph 72, subparagraphs i–v and vii, of the deepwater sharks workshop report.
228. The SC considered the recommendations under paragraphs 72.vi., 78–80, 83 and 85 together.
229. The SC noted the high and increasing level of Portuguese dogfish (*Centroscymnus coelolepis*) bycatch; that they constituted the second highest species of catch among all demersal fish in the SIOFA Area in 2022; that the annual catch of Portuguese dogfish in 2022 was the second highest on record; and that Portuguese dogfish accounted for 75% and 80% of total longline catch in Subarea 2 in 2022 and 2021, respectively.
230. The SC recommended that the MoP consider implementing measures to ensure Portuguese dogfish is sustainably managed and SC recommended the use of nylon traces for demersal longlines and a catch limit for Subarea 2.
231. Regarding the use of nylon traces, the SC noted that a number of studies have shown their effectiveness as a shark bycatch mitigation measure, including for demersal longline fisheries.
232. Regarding the interim catch limit, the SC noted the discussion under agenda item 6 on harvest strategies and recommended the MoP consider a catch limit, based on the average bycatch over the previous 5 years (2018–2022) of Portuguese dogfish in Subarea 2, which was 767.6 t.
233. The SC noted that EU (Spain) has implemented a voluntary move-on rule for the Spanish longline vessel operating in Subarea 2 involving a 3 nm move-on for the first encounter and 5 nm for subsequent encounters. The SC noted that the first move-on rule has been triggered very frequently, suggesting that it is ineffective in reducing shark bycatch.
234. The SC recommended that the first encounter move-on distance be increased to 5 nm.
235. The SC recommended to the MoP that, as a precautionary measure, catches of *Centrophorus granulosus*, *Dalatias licha* and *Deania calceus* be managed until the SC can conduct further analysis to determine the sustainable catch. The SC noted that the interim management measures proposed to apply to Portuguese dogfish (paragraphs 230–234) would also reduce the fishing mortality of these three species, which are caught in association with Portuguese dogfish.
236. The SC noted that the three interim management measures may potentially impact the catch of target species in Subarea 2.
237. The SC recommended that, analyses should be conducted to evaluate these interim measures' effectiveness, such as Monte-Carlo simulations and a catch-by-distance CPUE depletion analysis, and that once these analyses are completed, the interim measures could be adjusted accordingly.
238. The SC recommended that collection of biological data, particularly aging data, for Portuguese dogfish be enhanced with the aim of conducting a preliminary quantitative assessment at SC9 and a formal quantitative assessment at SC10 for determining trends in biomass and the sustainable level of Portuguese dogfish catch.
239. The SC considered the recommendations in paragraphs 81 and 82 of the deepwater sharks workshop report, regarding other potential mitigation measures, together. The

EU provided more information regarding the number of hooks currently being used. The SC noted that the EU's preliminary analysis of the Spanish longline fishery operating in SIOFA suggested that reduced numbers of longline hooks set and reduced soak times for longlines may reduce shark bycatch and increase shark survival rates.

240. The SC noted that the mean number of hooks per longliner in subarea 2 is 13 000 hooks per set and consideration could be given to mitigation measures to reduce the number of hooks per set and for reducing soak times to help reduce shark bycatch and increase survival rates in this subarea, while noting that they may be secondary to the use of nylon traces and the implementation of a catch limit.
241. Regarding paragraph 73 of the deepwater sharks workshop report, the SC recommended including 12,000 euros in the SC budget to cover Mr Clerkin's travel between the United States and Mauritius for conducting a study onboard a trawl vessel to analyse deep-sea shark bycatch and collect deep-sea shark data, including age samples to augment any that are collected by the EU longline vessel. It was noted that care be taken to ensure maturity data be collected in a manner that is compatible with those collected from the EU longline fishery. The SC noted that this would be further considered in the SC workplan under Agenda Item 11.
242. The SC noted paragraph 74 of the deepwater sharks workshop report and that the different fisheries in the SIOFA Area that interact with deepwater chondrichthyans may require different management measures.
243. The SC noted paragraph 75 of the deepwater sharks workshop report and endorsed the recommendation that if potential management measures for the benthopelagic trawl fishery were considered, they should be focused on minimising shark bycatch and maximising data collection.
244. Regarding paragraph 76 of the deepwater sharks workshop report, the SC noted that the deepwater shark species caught in the benthopelagic fishery could be categorised based on how commonly they are caught, noting that some species are rarely caught and are very difficult to identify, while for others that are more commonly caught, such as southern lantern shark, there is an opportunity for monitoring and biological data collection for better understanding their biological parameters. The SC noted that this would be an important consideration in any project for the collection of shark data.
245. Regarding paragraph 77 of the deepwater sharks workshop report, the SC noted that there is a considerable amount of skate bycatch in the toothfish longline fishery in Subareas 3b and 7 and endorsed the workshop's recommendation that the SC consider similar measures to the CCAMLR protocols for move-on rules for and tagging of skates caught in the SIOFA toothfish longline fishery.
246. The SC recommended that the MoP consider developing and implementing a tagging programme as soon as possible for skates caught alive and with a high probability of survival on longline vessels. The SC recommended that the MoP note, when considering the development of a tagging programme, that in CCAMLR skates are cut off at the roller but that practices among vessels operating in SIOFA may differ and need to be considered accordingly.
247. The SC recommended that the MoP consider a potential 5 nm move-on rule to be applied when the total weight of the catch of skates is the greatest percentage by weight of the total catch similar to the voluntary move-on rule which EU (Spain) applies on deepwater sharks.
248. The SC noted the recommendation in paragraph 84 of the deepwater sharks workshop report that the SC conduct further research to better understand the habitats and behaviour of deepwater sharks in this area, such as nursery grounds, areas where

females concentrate, hotspots, etc., towards informing measures such as the setting of spatial management measures and protection of large, especially pregnant females. The SC noted that the study proposed by SIODFA and the ongoing research by the European Union constitute such research. The SC discussed such research further when discussing its workplan under agenda item 11.5.

249. The SC endorsed the recommendation in paragraph 86 of the deepwater sharks workshop report that the list of species at high risk and of concern in CMM 2022/12 (Sharks) be updated by incorporating the nine species newly found to be at high or extreme risk based on the chondrichthyan ERA update conducted by Australia (*Bathyrāja tunae*, *Centrophorus squamosus*, *Centrophorus uyato*, *Deania profundorum*, *Deania quadrispinosa*, *Etmopterus bigelowi*, *Etmopterus viator*, *Rhinochimaera africana*, *Squalus mitsukurii*). The proposed updated list is attached as **Annex J**.
250. The SC recommended that the MoP update the list of species at high risk and of concern in CMM 2022/12 (Sharks) by incorporating the nine species at high or extreme risk in the chondrichthyan ERA update, namely *Bathyrāja tunae*, *Centrophorus squamosus*, *Centrophorus uyato*, *Deania profundorum*, *Deania quadrispinosa*, *Etmopterus bigelowi*, *Etmopterus viator*, *Rhinochimaera africana*, *Squalus mitsukurii*. The proposed updated list is attached as **Annex J**.
251. The SC requested the Secretariat to communicate with FAO to obtain new species codes for *Bathyrāja tunae* and *Rhinochimaera africana*.
252. The SC requested that a draft proposal for revising CMM 2022/12 be prepared by the Secretariat for consideration by the MoP.
253. Regarding paragraph 87 of the deepwater sharks workshop report, the SC welcomed FAO's development of a more practical species identification guide for deepwater sharks under the Deep-Sea Fisheries (DSF) Project and looked forward to reviewing the guide when it is completed.
254. The SC endorsed the recommendation in paragraph 88 of the deepwater sharks workshop report that the SC develop, as an identification assistance resource, a photographic archive of species that CCPs could use on a trial and voluntary basis. The SC noted that the method of species identification would need to be included in the archive, e.g., identified by a taxonomist, observer guide, etc. Each photo and the information associated with each photo should be linked to the logbook or observer record of the fishing event it originated from along with genetic subsample of species where possible for verification. The release of any data from the archive would need to be done in accordance with the relevant SIOFA CMMs and protocols.
255. Regarding paragraph 89 of the deepwater sharks workshop report, the SC noted that the collection of photos would be useful for any future development of an AI identification process.
256. The SC thanked the EU for funding and hosting the workshop and for providing much of the associated data, as well as Dr Sebastián Rodríguez Alfaro, the SC Vice-Chair, for convening and coordinating the workshop.
257. The SC noted that the EU-funded project on improving the scientific advice for data-limited deep-water sharks caught in longline fisheries in the SIOFA Area would provide valuable information for the scientific evaluation of deepwater sharks in the SIOFA Area and thanked the EU for proposing to undertake this project. The SC also encouraged cooperation among CCPs to collect vertebrae for aging shark species, especially between CCPs that catch sharks using different fishing gears.

Agenda Item 7.3. Teleosts and other priority species

Agenda item 7.3.1. Updates on the teleosts Ecological Risk Assessment

Agenda item 7.3.2. Priority species for assessment

258. No papers were submitted under agenda item 7.3. but the SC discussed work on teleosts and other priority species as part of its discussions on the SIOFA Ecosystem Summary and the SIOFA fisheries summaries under agenda items 3.3.2. and 3.3.3.

Agenda Item 7.4. Seabirds, mammals, and incidental catch of other species of concern

Agenda item 7.4.1. Report on observations of marine mammals interacting with fishing gear

259. The Data Officer introduced SC-08-INFO-09, which summarised information about interaction with marine mammals as recorded in the observer databases and the annual data submission made by CCPs.
260. The SC encouraged CCPs to record “nil” or “none” etc., for data fields instead of leaving blanks, as the former is informative and facilitates data analyses, while the latter is ambiguous and creates problems when interpreting data for analyses.

Agenda item 7.4.2. Fishing in IMMA areas

261. The Science Officer presented SC-08-INFO-11, which summarised the catch and effort (main target species and effort by gear type) in current IMMA areas and outline the steps for participation in their designation process.
262. The SC noted that the Secretariat has obtained the shape files for the IMMA areas and that CCPs can request them from the Secretariat.
263. The SC noted the steps for participation in the IMMA designation process.
264. The SC noted that there was some SIOFA fishing effort reported in the IMMA areas.

Agenda item 7.4.3. Seabird mitigation measures

265. The Chair reminded the SC that SC7 had planned to hold a workshop for discussing seabird data collection and bycatch mitigation in the intersessional period, but had been unable to fit the workshop into its schedule.
266. The Agreement on the Conservation of Albatrosses and Petrels (ACAP) reminded the SC that it had presented information papers at SC7 on the conservation status of albatrosses and petrels and ACAP advice on reducing their bycatch in SIOFA fisheries (SC-07-INFO-10) and a review of SIOFA seabird bycatch and data standard CMMs against ACAP advice (SC-07-INFO-09-Rev1). ACAP informed the SC that there has been no update from ACAP regarding the conservation status of albatrosses and petrels and ACAP advice on reducing their bycatch. ACAP also welcomed SIOFA's adoption of IOTC Resolution 12/06 on reducing the incidental bycatch of seabirds in longline fisheries, while noting that SIOFA has yet to adopt some of the other best practices recommended by ACAP.
267. The DSCC pointed out that other RFMOs have adopted seabird bycatch mitigation measures for both longline and trawl vessels and called for SIOFA to adopt such measures for trawl vessels.
268. The SC agreed to include a focused agenda item on seabird data collection and bycatch mitigation measures at SC9. The SC agreed that it would be useful to invite vessel operators and other appropriate parties, such as Southern Seabirds Trust, to participate in the discussions under that focused agenda item and share their experience. The SC also requested the Secretariat to prepare and present a paper summarising available information about SIOFA seabird bycatch mitigation measures and seabird interactions.

Agenda item 7.4.4. IOTC bycatch

269. The Data Officer presented SC-08-27-Rev1, which provided a summary data analysis of the Indian Ocean Tuna Commission (IOTC) bycatch for species caught in the SIOFA Area. IOTC and SIOFA have a very large marine area in common with vessels susceptible to catching species of interest to each organization. IOTC provided the SIOFA Secretariat with complete catch figures reported to IOTC by its members, which included non-IOTC species. The Secretariat computed the catch of non-IOTC species that occurred in the SIOFA area in the recent period (since 2000). Several fishing vessels flagged to countries that are not SIOFA CCPs caught significant quantities of species that fall under the SIOFA management mandate. Fishing from vessels flagged to SIOFA CCPs had significant catches which have not been reported to the SIOFA Secretariat. For several species, it is still unclear if the catch (and effort) should be reported to SIOFA and be part of the SIOFA management mandate.
270. The SC recommended that the MoP note that there is catch associated with the IOTC in the SIOFA Area and that such data should be requested and submitted to SIOFA.
271. The SC noted that there is significant catch in cells that are both in EEZs and in SIOFA, and that this catch information would need to be considered for any future assessment of oilfish in the SIOFA Area. The SC requested that the Secretariat add this information to the oilfish fishery summaries.

Agenda item 8 – Vulnerable Marine Ecosystems (VME)

272. Agenda items 8.1–8.3 were chaired by the SC Vice-Chair.

Agenda item 8.1. Report of the VME workshop (WS2022-VME1)

273. The SC Vice-Chair presented the report of the VME workshop (SC-08-25).
274. The SC reviewed the workshop report and its recommendations.
275. The SC endorsed the recommendation in paragraph 13 of the VME workshop report and requested the Secretariat to prepare a proposal on behalf of the SC to amend the typographic errors in CMM 2020/01 (Interim Management of Bottom Fishing) Annex 1 for adoption by the MoP. These are given in **Annex K** of this report.
276. Regarding paragraphs 19 and 21 of the VME workshop report, the SC noted that different VME management options were available and were summarised by McConnaughey et al. (2020) and had been combined in a table by the Workshop with potential timelines (**Annex L**). The SC recommended that the MoP consider the table, while noting that the table was intended only to demonstrate potential options and how long it would potentially take the SC to provide advice on each option, rather than representing options that had been evaluated and recommended by the SC.
277. The SC endorsed and elaborated on the recommendation in paragraph 24 of the VME workshop report as follows. While recognising that there is currently no CMM for research and exploratory fishing, the SC recommended that the MoP note that proposals for exploratory fishing both inside and outside of the current fishing footprint should provide information on VMEs and environmental data (e.g., bottom current, temperature, substrate type), and include consideration of the use of benthic cameras, and collection and retention of samples, etc. as a part of the research activity.
278. The SC endorsed the recommendation in paragraph 33 of the VME workshop report and requested the Secretariat to review and prepare a paper on the individual

- encounter thresholds resulting in a move-on rule used at other RFMOs and the basis that was used for setting them for discussion at SC9.
279. The SC endorsed the recommendations in paragraph 36 of the VME workshop report that the SC develop research and data collection plans on how to fill the data gaps and hence reduce the uncertainty in its advice, and that the SC further develop the potential timelines given in the table on expected performance of different management measures and voluntary industry actions intended to minimize trawling effects (**Annex L**), and the table on pros and cons of the different categories of VME management measures available to SIOFA (**Annex M**). The SC noted that the development of research and data collection plans, while useful, are unlikely to result in the collection of much more VME data, because of the low frequency of vessels encountering VMEs in the SIOFA Area.
 280. The DSCC suggested that the catchability of VME species should be considered in the development of data collection plans.
 281. The SC endorsed the recommendation in paragraph 45 of the VME workshop report and recommended that photograph images on VME indicator taxa be included in the SIOFA observer database and linked to a specific fishing activity along with spatial coordinates. The SC noted that a number of other similar recommendations on the collection of photographs have been made to the SC and noted the need to adopt a standardised approach for linking photos to the observer database records.
 282. The SC noted that the quality of VME data collection has improved in recent years since the adoption of mandatory observer data collection requirements in 2018.
 283. The SC endorsed the recommendation in paragraph 46 of the VME workshop report and recommended to the MoP that presence/absence data for all VME taxa be recorded in the vessel logbooks (in addition to the observer data) as a first step to collect all information on VME taxa encountered by fishing vessels. Specifically, the SC recommended that VME taxa be recorded at the finest taxonomic level possible and that the quantity caught, including zero catches, be recorded.
 284. The SC endorsed the recommendation in paragraph 47 of the VME workshop report and recommended to the MoP that a trial collection of photographs of all sessile invertebrate occurrences (one picture per occurrence in each haul) should be added to the data required to be collected by the Scientific Observers and that this be required for a 3-year trial period, after which the SC would evaluate the data collected and recommend whether the trial needs to be continued.
 285. The SC endorsed the recommendations in paragraph 53 of the VME workshop report that, given the low levels of data available, the level of taxonomic aggregation be used in further analyses of the historical catch data be for corals and sponges, but also that the current level of aggregation be as that defined in CMM 2020/01 when considering thresholds, and that data continue to be collected and reported at the finest taxonomic level possible.
 286. The SC noted the ambiguity of the terminology “highest” and “lowest” taxonomic level, and encouraged the use of “finest” and “coarsest” going forward.
 287. The SC endorsed the recommendation in paragraph 54 of the VME workshop report and recommended that the MoP consider revising CMM 2022/02 (Data standards) to ensure the reporting of corals be recorded as alive or dead (**Annex N**).
 288. Regarding paragraph 64 of the VME workshop report, the SC shared the workshop’s recognition that thresholds are part of the requirements for move-on rules, and that move-on rules are one of a range of potential management approaches that could be used for providing protection for VMEs. The SC requested that the MoP provide it with direction on likely management options for preventing significant adverse impacts

(SAIs) on VMEs, so that the SC can focus its endeavours on management options that are most likely to be considered by the MoP.

289. Regarding paragraph 57 of the VME workshop report, the SC noted that encounters from demersal longline are required to be reported at the line segment level (i.e., per 1000 hooks or 1200 m, see CMM 2020/01), but that the data record VMEs for entire haul/set, and requested that the MoP consider revisions to either CMM 2020/01 (Interim Management of Bottom Fishing) or CMM 2022/02 (Data Standards) that would ensure that vessel reported VME indicator taxa captures and Observer data reports were consistent.

Agenda item 8.2. VME data and the setting VME of encounter thresholds

290. The Science Officer presented SC-08-26-Rev1, which described the available VME indicator taxa accidental captures data from the Observer and CatchEffort databases and their usability for setting VME encounter thresholds. The paper was prepared in response to recommendations from the VME Workshop and provided an overview of the data available on VME indicator taxa accidental captures; an outlook on the effects that different taxonomic aggregations have on the availability of data; a preliminary analysis of potential VME encounters in historical fisheries data, including a detailed analysis of data around potential encounters; a simple evaluation of scenarios to assess the effects of changing the current VME encounter threshold levels; and an elaboration of potential cumulative curves that could be used to set thresholds.
291. The SC noted a temporal aspect to some of the VME encounters, with most of the large individual encounters occurring further in the past and recent encounters being smaller. To investigate this temporal aspect further, the SC requested the Science Officer to generate updated cumulative catch curves for sponges and corals, separately by gear, with the following temporal periods:
- i. Five-year periods; or
 - ii. Two periods: the period before the encounter threshold was set and the period since then
292. The DSCC suggested that the analysis presented by the Science Officer indicated that the encounter threshold for sponges was too high and should be lowered.

Agenda item 8.3. VME mapping project (PAE2021-02)

293. The consultant, the Laboratory of biology of aquatic organisms and ecosystems (BOREA), Muséum d'Histoire Naturelle, presented SC-08-30, which described progress on the work towards completion of the Terms of References for Project PAE2021-01 "Bioregionalization and management of vulnerable marine ecosystems". The project has several lines of work, consisting of (1) finishing the development of a predictive bioregionalization for SIOFA and the evaluation of alternative environmental classifications available for the area; (2) the assessment and development of biodiversity models; (3) the identification of measures to prevent significant adverse impacts; (4) the quantification of potential significant adverse impacts from fishing; and (5) the investigation of systematic conservation planning for SIOFA.
294. BOREA explained that it investigated the use of habitat suitability modelling, specifically stacked taxa distribution modelling (S-TDM) and macro-ecological modelling (MEM), in predicting benthic species diversity and distribution in the SIOFA management area, including assessing data availability for such modelling. It found that both modelling approaches, S-TDMs and MEM, offer similar spatial patterns of diversity. These are still predictive approaches based on sparse data of the Indian Ocean. It is recommended that only the S-TDMs models are considered for further analysis of potential patterns. For the S-TDMs models, using the definition of hotspot

- (e.g., areas with top 5%, or top 10% of biodiversity) may help in the prioritisation of biodiversity, such as including that information in a systematic conservation planning.
295. BOREA explained that it also sought to identify and update existing and potential SAls on VMEs within the SIOFA Area, looking at what the spatial distribution of fishing is across predicted bioregions based on VME indicator taxa and how the fishing effort is distributed across the probability classes of predicted bioregions, and integrating how potentially impacted each bioregion is into a “fishing intensity impact index”. It was found that for all four gear types, there was fishing occurring in predicted areas of high suitability in all bioregions. Bioregion 1 was the most impacted by trawling, gillnets, and line fishing. There is a marked spatial distribution of the four gear types in SIOFA with subregion 1.2 most impacted by trawling, gillnets, and line fishing and subregion 2.4 by traps. For the subregions, the uncertainties of the predictions will need to be considered when interpreting the index results. The index offers a first approximation to assess potential impacts of fishing on the bioregions for each gear type. The index can be updated as new data become available in the form of better bioregion predictions and fishing effort.
 296. BOREA further explained that it investigated the identification of representative protected areas within the SIOFA Area based on bioregionalization work, exploring systematic conservation planning (SCP) to create scenarios of a reserve network within SIOFA using Marxan as a decision support tool. Marxan was found to be a good solution to explore SCP. The analysis focused on selected features (like ecologically or biologically significant areas (EBSAs)) but could not consider local knowledge about specific areas of importance (that may not have been captured by EBSA). This was hence a starting point for a process, not the end. The integration of aggregated fisheries did not result in loss for any fisheries, as the fishing footprint was completely avoided. In total, approximately 4%, 7% and 10% of the overall area was set aside for protection in the low, medium, and high target cost scenarios, respectively. SIOFA’s existing interim protected areas were not selected in the solutions. There were not enough data to include the importance of those areas. The ecological targets for each conservation feature should follow consultation and careful consideration of the nature of each input layer. In addition, there should be further consideration of what conservation features to include. Further agreement on the spatial resolution of the planning units (PUs) will be required. Marxan results should be interpreted with caution and relative to the parameters and conservation features selected for the investigation.
 297. The SC noted that only the biodiversity model based on S-SDMs should be considered and that the application of the definition of hotspot to the S-SDMs should be considered for use in future conservation planning.
 298. The SC noted that the critical under-sampling in the SIOFA Area prevents the calibration of adequate diversity models and noted that it may be useful to foster sampling campaigns in the SIOFA Area.
 299. The SC noted the consultant’s development of a fishing intensity impact index to aid in the consideration of bioregions (and specific areas therein) that are potentially more impacted by fishing activities and the potential to update the index as new data become available. The SC noted that the index indicated the potential risk of fishing impacts to Bioregion 1, and particularly the risk of subregion 1.2. The SC noted the potential of the fishing intensity impact index as a tool for exploring scenarios of management.
 300. The SC noted that the results of the investigation of the use of Marxan as a decision-support tool in the identification of biodiversity areas in SIOFA whilst minimising impacts to existing fisheries should be interpreted relative to the conservation features

and ecological targets included in the analysis. The SC noted that the “best solutions” produced by Marxan are one solution within a continuum of very good solutions.

301. The SC noted that not all available information for the SIOFA Area can be integrated into spatial layers and that decisions made about where to designate biodiversity areas will need to factor in all possible available information that is not integrated into a spatial layer and in a wider consultation context.
302. The SC noted that the results of the work by BOREA can serve as a starting point to discuss what conservation features to include and what not to include.
303. The SC noted that the paper presented by BOREA (SC-08-30) is a preliminary version of the final report and that it would be finalised in the coming month. The SC requested that the finalised report be submitted to SC9 for further discussion.

Agenda item 8.4. Revisions of the list of VME taxa

304. The SC considered and endorsed the typographical corrections proposed to the list of VME taxa by the VME workshop under agenda item 8.1. and tasked the Secretariat to draft amendments to the CMM accordingly (**Annex K**).

Agenda item 9 – Data standards

Agenda item 9.1. Annual catch and effort data submission

305. The SC discussed CCPs’ annual catch and effort data submission under agenda item 5.

Agenda item 9.2. Observer framework harmonisation

306. The SC Chair reminded the SC that the Workshop on Harmonisation of Scientific Observers’ Programmes was held in 2021 and made a number of recommendations to SC7 on how to progress the harmonisation of observer frameworks. A project has been created to hire a consultant that would provide a report on establishing a harmonised framework for scientific observation of SIOFA fisheries. It was also decided that, once the project was contracted, the SC would convene an ad hoc Project Advisory Panel that would work with the consultant.
307. The SC Chair reminded the SC that SC7 recommended that the SC Chair be tasked with developing a proposal for a SIOFA Observer Code of Conduct, including health and safety and other aspects of the observer programme. The MoP noted and encouraged the development of the Code of Conduct and tasked the development of the compliance-related aspects of this Code of Conduct to the Compliance Committee. The SC will be able to progress this work further after consideration by the Compliance Committee and the MoP.
308. The SC Vice-Chair provided further details on the project for the establishment of a framework for scientific observation of SIOFA fisheries (SEC2022-OBS1). The workplan and Terms of Reference for the project were drafted intersessionally. The main objectives of the project are to analyse CCPs’ main observer programmes; identify synergies for improving scientific observer management and optimising coverage and deployment, with the aim of setting a consistent standard for scientific observation; describe and recommend potential tools and operational characteristics for electronic observer monitoring on board vessels; propose potential updates of the SIOFA CMM/02 (Data Standards), focusing on Annex B (Observer Data); and provide a first draft proposal for a new CMM for regulation of scientific observer harmonisation in SIOFA.

309. The SC held preliminary discussions on the membership of the SEC2022-OBS1 Project Advisory Panel. Australia, the Cook Islands, the EU, France (Overseas Territories), and Thailand expressed initial interest in nominating representatives to serve as members. The SC encouraged Chinese Taipei to participate as the observer framework would include the pelagic fisheries. The SC suggested that Dr Tony Thompson (FAO) and others could be invited to participate as technical advisors.
310. The SC noted that ad hoc workshops could be held for the SC to review the progress of the project, as appropriate.
311. The FAO informed the SC that the DSF Project will work with observers globally and in collaboration with International Council for the Exploration of the Sea (ICES) to record data for data-limited species and share these data with SIOFA.
312. The SC expressed its appreciation to Dr Sebastián Rodríguez Alfaro, the SC Vice-Chair, for leading efforts towards harmonising CCPs' observer programmes and continuing to lead the development of the project.

Agenda item 9.3. E-monitoring

313. The SC agreed to discuss e-monitoring at a future meeting, taking into account any relevant discussions and outcomes from the project for the establishment of a framework for scientific observation of SIOFA fisheries (SEC2022-OBS1), and technological developments around e-monitoring.

Agenda item 9.4. Lost gear reported under CMM 2022/02 Annex A

314. The Data Officer presented SC-08-INFO-08, which summarised all lost gears as reported under CMM 2022/02 (Data Standards), Annex A. The only gears reported to have been lost are hooks and line-based traps. Demersal longline gear was the most frequently lost gear type. In the recent years more reports of hooks lost have been recorded. The data as they stand cannot separate hooks lost due to hooking on seafloor features, and hooks lost due to fish being cut or bycatch of large animals. However, when many hooks are lost in one operation, it is reasonable to assume that it is because of the seafloor or the sea conditions and not related to catch or bycatch.
315. The SC noted that the reporting of the retrieval/recovery of lost fishing gear in the SIOFA Area is also required under CMM 2022/09 (Control) and defined as one of the roles and tasks of SIOFA observers under CMM 2022/02 (Data Standards) but that this information is not reported to the Secretariat in a standardised way. The SC agreed that the next report on lost and retrieved gears includes also the information set under that CMM.

Agenda item 9.5. Proposals for revisions to CMM 2022/02 (Data Standards)

316. The SC requested the Secretariat to prepare a draft of proposed revisions to CMM 2022/02 (Data Standards) based on the recommendations made by the VME workshop that are endorsed by the SC. The SC reviewed the proposed revisions and recommended them for endorsement by the MoP (**Annex N**).

Agenda item 10 – Cooperation with external bodies

317. The SC discussed attendance by members of the SIOFA SC at the scientific committee meetings of other RFMOs to share SIOFA SC activities of relevance to those RFMOs, as well as to share those RFMOs' scientific activities that are of relevance to SIOFA with the SIOFA SC.

318. The SC accepted the offers of Australia to represent the SC at IOTC, the Cook Islands to represent the SC at SPRFMO, the EU to represent the SC at SEAFO and Japan to represent the SC at CCAMLR. The SC recommended that the Science Officer be able to represent the SIOFA SC at the scientific committee meetings of RFMOs other than those above, where possible and relevant.

Agenda item 10.1. FIRMS coordination and work

319. The Science Officer introduced SC-08-INFO-05, which summarised the activities undertaken in 2022 to advance cooperation between SIOFA and the FAO Fisheries and Resources Monitoring System (FIRMS).
320. The Data Officer presented an example page relating to SIOFA from the FIRMS website.
321. The SC acknowledged and expressed its thanks for the useful and constructive cooperation of the FAO-FIRMS team.

Agenda item 10.2. FAO ABNJ DSF activities

322. The Science Officer presented SC-08-INFO-06, which described SIOFA's contribution to the FAO Areas Beyond National Jurisdiction (ABNJ) Deep Sea Fisheries (DSF) Project. These include participation in the FAO-DSF expert revision of the implementation of the Deep Sea Guidelines, participation in the FAO-DSF Project inception meeting, and confirmation of SIOFA's interest and nomination of an expert to FAO for participation in Output 2.2.2 of the DSF Project, "Support provided to RFMOs for improving catch recording (retained and discarded) and scientific advice on data-limited stocks".
323. The FAO provided some additional details about the ongoing activities of the ABNJ DSF Project. The FAO explained that the Project is focused on data-limited or difficult-to-assess stocks, VMEs and deepwater sharks across ABNJ bottom fisheries globally. Its current activities cover areas that include international instruments and how RFMOs and States are responding, science-management interface, industry contributions for sustainable fisheries, ecosystem approaches to fisheries at the ecosystem level, new technologies for catch recording such as use of cameras to support observers, methods to identify VME, global review of the implementation of the DSF Guidelines, and cross-sectoral consideration.
324. The SC acknowledged and expressed its thanks for the cooperation of the ABNJ DSF Project team and looked forward to future engagement and the outcomes of the Project.

Agenda item 10.3. Report of the Monaco Exploration

325. Monaco Explorations presented SC-08-INFO-15, which provided a report on the expedition undertaken in October and November 2022 in the Western Indian Ocean by Monaco Explorations in liaison with the Governments of Mauritius and Seychelles. Part of the expedition involved the investigation of Saya de Malha Bank with physical and chemical oceanography surveys, microplastic sampling zooplankton sampling, diver sampling, remotely operated underwater vehicle (ROV) exploration, habitat mapping, and tow surveys. The investigation found that Saya de Malha Bank receives low productivity water flowing from the east, but may generate its own productivity by local processes on the shelf and export it to the west, low abundance of megafauna associated to the bank and low benthic biomass, high species richness of benthic invertebrates dominated by small-sized organisms, and a huge potential for discovery of new species. The expedition built on and fostered the regional collaboration between Mauritius and Seychelles and their scientific communities. The preliminary

report of the expedition is expected in June 2023, and the final report in December 2025.

- 326. The SC thanked Monaco Explorations for undertaking this work and for providing the information to the SC, and requested Monaco Explorations to share the data collected and continue to update the SC on its progress.
- 327. The SC recommended that the MoP note that the Monaco Exploration expedition had observed a fleet of Sri Lankan gillnetters east of Saya de Malha Bank.

Agenda item 11 – Future work

Agenda item 11.1. Progress of EU funded science projects

- 328. The Science Officer introduced SC-08-INFO-07, which provided an update on the progress status of projects funded by the SIOFA EU grants. The EU has funded several projects that boost the capacity of SIOFA. These include the SIOFA VME mapping (SI2.815850); support for the hosting of the SC8 meeting and two workshops in the Canary Islands (SIOFA-SC8); the SIOFA performance review (SIOFA-REV); 2020-2022 support for SIOFA scientific work on key stocks, ecosystems, and data (SI2.837681); and support for ecosystem approaches to fisheries conservation and management in SIOFA (SIOFA-SEAs).
- 329. The SC noted that EU funding has supported and will continue to support a large amount of the scientific work of the SC. The SC expressed its gratitude to the EU for making those funding opportunities available to SIOFA.
- 330. The SC expressed its appreciation to the SC Chair, the SC Vice-Chair, and the Secretariat, especially the Science Officer, for their engagement with these funding opportunities.

Agenda item 11.2. The SIOFA Performance Review

- 331. The Chairperson of the SIOFA Performance Review Panel, Ms Fuensanta Candela Castillo, presented SC-08-28, which provided the first draft of the 1st SIOFA Performance Review Report for review and feedback by the SC regarding the accuracy of the information and data presented therein on matters of the SC's competence and other matters linked to it, and regarding any topics the Panel might have omitted which the SC believes are relevant for the SIOFA Performance Review process. The draft report may subsequently be modified by the Panel to take into account the SC's feedback and the final report will be completed by 30 April 2023.
- 332. The SC expressed its general agreement with most of the descriptions in report.
- 333. The SC clarified, with regard to paragraph 96 of the Review Panel Report, that the SC has completed the revised bottom fishing impact assessment and that this has been recommended to the MoP for adoption.
- 334. The SC noted that in several parts of the Panel Report a link was drawn between reductions in catches and declines in abundance, and the SC clarified that in some instances, the decline in catch may be due to a reduction in effort from operational and capacity constraints, such as in the orange fishery, where one vessel has experienced mechanical issues in recent years and the other vessel withdrew from the fishery in November 2022.
- 335. The SC pointed out that at this year's meeting, it has made considerable progress on several of the issues raised in the Panel Report. The SC requested the Review Panel note this progress and related discussions, and update the Panel Report where

appropriate. The SC wished to draw the Review Panel's attention to the following points from this year's meeting in particular:

- i. The SC has endorsed a bottom fishing footprint and recommended it to the MoP for adoption. (See paragraphs 86–89, 92–95.)
 - ii. The SC has developed a fishery summary for orange roughy and an ecosystem summary that it will recommend to the MoP for publication alongside an update to the Overview of SIOFA fisheries. (See paragraphs 49–50, 65–66, 69, 83–84, 129.) The SC has been developing fisheries summaries for a large number of other species as well, including alfonsino; Patagonian toothfish; oilfish and escolar; hapuka, hapuku wreckfish, wreckfish; and terakihi; and has recommended the development of a fisheries summary for common mora and the associated bycatch of Portuguese dogfish. These documents summarise scientific advice and information associated with these species to collate information about them for the MoP, scientists, and the public. (See paragraphs 71–79, 85.)
 - iii. The SC has outlined steps for the MoP to take for conducting a toothfish stock assessment, including the development of additional stock monitoring and data collection plans. (See paragraphs 141–155.)
 - iv. Although there is no formal assessment process for oilfish, the SC has discussed the development of a standardised CPUE index for oilfish. (See paragraphs 158–160.)
 - v. The SC has reviewed the organisation of the SC and its working groups and recommended a robust format going forward with a combined SC meeting supplemented by focused agenda items and workshops where appropriate, as well as Project Advisory Panels to assist the work of consultancies. (See paragraphs 337–339.) The creation of the position of the Science Officer in 2021 has supplemented the existing Data Officer position and greatly enhanced the capacity of the Secretariat to advance scientific work.
 - vi. The SC has discussed the definitions of target and bycatch species and recommended them to the MoP. (See paragraphs 204–209, Annex I.)
 - vii. The SC has held an in-depth workshop on deepwater sharks and made several recommendations to the MoP, including interim management measures. (See paragraphs 224, 229–241, 245–247, 249–250, 252.)
 - viii. The SC has continued to improve transparency each year. In particular, it has made the abstracts of restricted SC documents publicly available this year. The SC has requested the Secretariat to make the abstracts for restricted papers from all previous Scientific Committee and scientific working groups meetings also available on the public website. (See paragraph 106.)
 - ix. Other key recommendations of relevance to the Review Panel are contained within this report with key recommendations to the MoP highlighted in grey.
336. The SC noted the request by the Review Panel that the SC hold an extraordinary meeting, or any other process considered appropriate, to examine the final Performance Review Report and provide its advice to MoP10 on the content of the Report. The SC confirmed that, in accordance with the Rules of Procedure, a CCP may request the holding of an extraordinary meeting of the SC. The SC endorsed the holding of a virtual meeting, with an agenda item that would consider the final Performance Review Report, to be held from 8 am to 11 am UTC on 1 June 2023, if one is requested.

Agenda item 11.3. Organisation of the Scientific Committee and its working groups

337. The SC recommended that the MoP note that the new combined SC meeting format trialled in 2023 worked well. The SC recommended that this format be adopted going

forward and be supplemented with workshops, as well as focused agenda items at the SC meeting itself, for topics requiring more detailed discussion and consideration.

338. The SC recommended to the MoP that this new combined SC meeting format be supported by the establishment of two Vice-Chair positions.
339. The SC welcomed the return to in-person meetings and noted that in-person engagement is essential for maximising the progress of the SC's work. The SC also noted the benefit of hybrid facilities in facilitating broader engagement and enabling participation by those unable to attend meetings in person. The SC further noted that, for certain types of workshops such as the VME workshop and the workshop on the development of ecosystem and fisheries summaries, a virtual format can work equally well as an in-person format.
340. The SC recommended that the MoP note that the creation of the Science Officer position and the appointment of Dr Marco Milardi have contributed greatly to progressing the work of the SC.
341. The SC recommended to the MoP that the next SC meeting, including any focused agenda topics, be held for 6–7 days, alongside any workshops as necessary, during the period of 18–27 March 2024.

Agenda item 11.4. Management and coordination of SIOFA science projects

342. The SC welcomed the progress in the scientific work of the SC made possible by the implementation of multiple projects. At the same time, the SC noted that each project requires a level of administrative and other non-science-related work, and, therefore, managing a large number of projects could place an excessive burden on the Secretariat, given its limited size and capacity.

Agenda item 11.5. Scientific Committee workplan and budget

343. The Science Officer presented the draft 2023 SC workplan and budget (SC-08-INFO-03).
344. The SC noted SC-Info-03 and endorsed the guidelines for the development of the SC workplan proposed in the paper (**Annex O**).
345. The Executive Secretary presented the draft budget for SC activities 2024–2026 (SC-08-INFO-18-Rev1).
346. The SC reviewed and revised the draft SC work plan for 2024–2026 (**Annex F**).
347. The SC reviewed and revised the list of proposed research activities with estimated budgets and noted it would allocate prioritisation to each of these projects following the meeting by email (**Annex F**).

Agenda item 12 – Other business

348. The SC Chair announced the establishment of the SIOFA Scientific Service Award to recognise individuals who have contributed to the scientific work of SIOFA for at least 5 years. The inaugural recipients were Tom Nishida, Ross Shotton, Patrice Pruvost, Lyn Goldsworthy, Takehiro Okuda, Heng Zhang, Rhys Arangio, Pierre Périès, Lee Georgeson, Ilona Stobutzki, and Brian Flanagan.
349. The Scientific Committee endorsed the establishment of the SIOFA Scientific Service Award and congratulated the recipients for their service and contributions to the work of the SIOFA Scientific Committee.

350. Japan, as the SC representative to CCAMLR, drew the attention of the SC to the CCAMLR Scientific Scholarship Scheme to assist early career scientists to participate in the work of the CCAMLR Scientific Committee and its working groups. Japan encouraged young SIOFA scientists from CCAMLR Members who are interested in conducting research in the CCAMLR Area to consider applying.
351. The SC Chair added that priority areas of CCAMLR research that are of relevance to SIOFA include methods for toothfish biomass estimation and stock assessment where mark-recapture programs are not feasible and models to assess the spatial overlap of longline fisheries and the distribution of tagged fish.
352. The SC noted that while it has in the past been able to accept and discuss information papers with recommendations or any information paper that would result in recommendations, the SC encouraged participants to submit such papers as working papers to give participants adequate time to review them in advance of the SC.

Agenda item 12.1. Elections of the Chair and vice-Chair of Scientific Committee and its Working Groups

353. The SC Chair noted that the term of the SC Vice-Chair would come to an end following MoP10 and that the SC had recommended the establishment of a second SC Vice-Chair position.
354. Thailand expressed its intention to nominate an SC Vice-Chair candidate who would be named at MoP10.
355. The SC welcomed Thailand's offer.
356. France (Overseas Territories) informed the SC that it is considering nominating an SC Vice-Chair candidate and would provide an update at MoP10.
357. The SC looked forward to the potential nomination.
358. The SC thanked Dr Sebastián Rodríguez Alfaro for his great contributions to the SC and advancing the scientific work of SIOFA.
359. The SC Chair noted that under the new SC format, there would no longer be a PAEWG and the position of PAEWG Chair would no longer be required.
360. The SC thanked Mr Patrice Pruvost for serving as the Chair of the PAEWG since its very first meeting in 2019.
361. The SC Vice-Chair noted that the term of the SC Chair would come to an end following MoP10.
362. The SC noted that this was the first year of holding the SC without its working groups and that this placed an additional burden on the SC Chair. Having a dedicated Chair who is highly experienced and capable was crucial to the successful running of the SC.
363. As there were no nominations for a new SC Chair from among CCPs and recognising the great progress the SC has made under the leadership of the current SC Chair, Mr Alistair Dunn, the SC recommended that the MoP extend his term for two years as this would facilitate and assure the implementation of the SC workplan over this time period.
364. The SC Chair thanked the SC and looked forward to being considered for a further term.
365. The SC recommended that its next meeting be held in the period of 18–27 March 2024.

- 366. Thailand informed the meeting that it may be able to host the SC meeting in 2024 and would provide an update at the MoP meeting later this year.
- 367. The SC thanked Thailand for its preliminary offer to host the SC meeting in 2024.
- 368. The Chair thanked all the participants for their positive engagement and contributions to the meeting.
- 369. The SC thanked the Executive Secretary, the Data Officer and the Science Officer for organising and supporting the meetings.
- 370. The SC thanked Mr Alexander Meyer for rapporteuring the meeting.
- 371. The SC expressed its thanks to the Oceanographic Centre of the Canary Islands, Spanish Institute of Oceanography for hosting the SC meeting and the harvest strategy pre-assessment and deepwater sharks workshops.
- 372. The SC thanked the European Union for funding the SC meeting and the harvest strategy pre-assessment and deepwater sharks workshops.
- 373. The SC expressed its appreciation for the excellent catering, transport arrangements, and IT services.
- 374. The SC thanked the Chair for ensuring the smooth running of the meeting.

ANNEX A: OPENING STATEMENT BY THE EXECUTIVE SECRETARY

Good morning, distinguished members of the Scientific Committee and welcome to SIOFA's 8th Scientific Committee Meeting. It is my great pleasure to welcome you all to this important meeting, which serves as an excellent opportunity for us to discuss and exchange ideas on a range of critical topics.

During the meeting, a range of topics will be covered, such as fisheries reports, bottom fishing footprint, data access and dissemination, stock assessments and advice, bycatch, vulnerable marine ecosystems (VME), data standards, cooperation with external bodies, and future work. The latest fisheries reports will be reviewed, followed by a discussion on the impact of bottom fishing footprint on marine ecosystems and potential management options. Ways to improve data sharing and management practices will also be explored, along with the latest stock assessments and advice. Strategies to reduce bycatch and protect VMEs in SIOFA fisheries will be examined.

The importance of maintaining high-quality data to support sustainable management will be emphasized, as well as the need for collaboration with external bodies. Lastly, areas for further research and development will be identified during the discussion of future work.

Our goal for this meeting is to create a valuable opportunity for fruitful conversations and the sharing of insights, which will lead to the sustainable management of SIOFA fisheries. We appreciate everyone's participation and eagerly anticipate interacting with you during the upcoming days.

To finish, I would want to thank the European Union who offer us the financial support to organize the workshops and the 8th Scientific Committee and to the "Instituto Español de Oceanografía de Tenerife", to welcome us in its nice facilities.

I wish you a very productive meeting and leave the floor to M. Alistair Dunn, Chairperson of the Scientific Committee.

ANNEX B: LIST OF PARTICIPANTS

Delegation	First name	Last name	Title	Position	Organisation	Email	In person	Virtual
Australia	Trent	Timmiss	Mr	SC HoD	ABARES	trent.timmiss@aff.gov.au	✓	
Australia	Krystle	Keller	Dr	Alternate	ABARES	krystle.keller@aff.gov.au		✓
Australia	Claire	Wallis	Ms	Advisor	AFMA	claire.wallis@afma.gov.au	✓	
Australia	Lynda	Goldsworthy	Dr	Advisor	University of Tasmania	lynda.goldsworthy@utas.edu.au		✓
China	Heng	Zhang	Dr	SC HoD	East China Sea Fisheries Research Institute, China Academy of Fisheries Science	zhangziqian0601@163.com		✓
China	Yongchuang	Shi	Dr	Alternative	East China Sea Fisheries Research Institute, China Academy of Fisheries Science	1024731143@qq.com		✓
China	Haibin	Han	Dr	Alternative	East China Sea Fisheries Research Institute, China Academy of Fisheries Science	1638657642@qq.com		✓
China	Zhou	Fang	Dr	Vice SC HoD	Shanghai Ocean University	zfang@shou.edu.cn		✓
China	Fan	Zhang	Dr	Alternative	Shanghai Ocean University	f-zhang@shou.edu.cn		✓
China	Jiaqi	Wang	Dr	Alternative	Shanghai Ocean University	jq-wang@shou.edu.cn		✓
China	Jiangfeng	Zhu	Dr	Alternative	Shanghai Ocean University	jfzhu@shou.edu.cn		✓
China	Qingpeng	Han	Dr	Alternative	Shanghai Ocean University	qphan@foxmail.com		✓
China	Jun	Yu	Dr	Alternative	Shanghai Ocean University	yujun010918@sina.com		✓
China	Chong	Sun	Dr	Alternative	China Ocean Fisheries Association	sunchong@cofa.net.cn		✓
Cook Islands	Stephen	Brouwer	Dr	SC HoD	Ministry of Marine Resources	steve@saggitus.co.nz	✓	
EU	Sebastián	Rodríguez Alfaro	Dr	SC HoD/Vice-Chair	Marine Sciences	sebastian.rodriguez@marinesciences.eu	✓	
EU	Roberto	Sarralde Vizuite	Mr	Alternate	Spanish Institute of Oceanography	roberto.sarralde@ieo.csic.es	✓	
EU	Santiago	Barreiro Jueguen	Mr	Fisheries Scientist	Spanish Institute of Oceanography	santiago.barreiro@ieo.csic.es	✓	
France-OT	Patrice	Pruvost	Mr	SC HoD	Museum national d'histoire naturelle (MNHN)	patrice.pruvost@mnhn.fr	✓	-
France-OT	Jules	Selles	Dr	Alternate	Museum national d'histoire naturelle (MNHN)	jules.selles@mnhn.fr		✓
Japan	Takehiro	Okuda	Dr	SC HoD	Fisheries Resources Institute, Japan Fisheries Research and Education Agency	okuda_takehiro83@fra.go.jp	✓	-
Japan	Midori	Hashimoto	Dr	Alternate	Fisheries Resources Institute, Japan Fisheries Research and Education Agency	hashimoto_midori91@fra.go.jp	✓	-
Japan	Naohisa	Miyagawa	Mr	Adviser	TAIYO A&F CO LTD	n-miyagawa@maruha-nichiro.co.jp		✓
Korea	Jeongseok	Park	Mr	SC HoD	Distant Water Fisheries Resources Division, National Institute of Fisheries Science	jeongseokpark@korea.kr		✓
Korea	Hyejin	Song	Dr	Alternate	Distant Water Fisheries Resources Division, National	hyejinsong@korea.kr		✓

Delegation	First name	Last name	Title	Position	Organisation	Email	In person	Virtual
					Institute of Fisheries Science			
Korea	Sanggyu	Shin	Mr	Delegate	Distant Water Fisheries Resources Division, National Institute of Fisheries Science	gyuyades82@gmail.com		✓
Mauritius	Vikash	Munbodhe	Mr.	Participant	Ministry of Blue Economy, Marine Resources, Fisheries and Shipping	vmunbodhe@gmail.com		✓
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Mauritius	Luvna	Caussy	Ms.	Participant	Ministry of Blue Economy, Marine Resources, Fisheries and Shipping	luvna_caussy@yahoo.com		✓
Seychelles	Rodney	Govinden	Mr.	Head of Delegation	Seychelles Fishing Authority	rgovinden@sfa.sc		✓
Seychelles	Vincent	Lucas	Mr.	Alternate	Seychelles Fishing Authority	vlucas@sfa.sc		✓
Seychelles	Gilles	Bessero	Mr	Expert	Société des Explorations de Monaco	gbessero@monacoexplorations.org		✓
Chinese Taipei	Ching Ping	Lu	Dr	SC HoD	Chinese Taipei	michellecplu@gmail.com; cplu@mail.ntou.edu.tw		✓
Chinese Taipei	Ren Fen	Wu	Mr.	Alternate	Chinese Taipei	fan@ofdc.org.tw		✓
Thailand	Pavarot	Noranarttragoon	Dr	SC HoD	Marine Fisheries Research and Development Division Department of Fisheries, Thailand	pavarotn@gmail.com	✓	
Thailand	Weerapol	Thitipongtrakul	Mr.	Alternate	Marine Fisheries Research and Development Division Department of Fisheries, Thailand	weerapol.t@gmail.com	✓	
India	Rajapandian	Jeyabaskaran	Dr	Director General	Fishery Survey of India	dg@fsi.gov.in		✓
Observers	Anthony	Thompson	Dr	Representative	Deep-sea Fisheries Project, FAO	anthony.thompson@fao.org	✓	✓
Observers	Ross	Shotton	Dr	Exec. Sec.	SIODFA	r_shotton@hotmail.com	✓	
Observers	Charles	Heaphy	Mr	President	SIODFA	charles.heaphy@sealord.co.nz	✓	
Observers	Paul	Clerkin	Mr	Observer	University of Virginia/SIODFA	pjclerkin@vims.edu	✓	
Observers	Igor	Debski	Dr	Observer	ACAP	idebski@doc.govt.nz		✓
Observers	Barry	Weeber		SC HoD	Deep Sea Conservation Coalition	baz.weeber@gmail.com		✓
Observers	Evgeny	Romanov	Dr	Project Leader	CITEB (Centre technique de recherche et de valorisation des milieux aquatiques)	evgeny.romanov@citeb.re		✓
Invited experts	Fuensanta	Candela Castillo	Ms	Chairperson	SIOFA Performance Review Panel	fuensanta.candela@gmail.com		✓
Invited experts	Katherine	Bernal	Mrs.	Invited expert	SIOFA Performance Review Panel	kbernal.abogado@gmail.com		✓
Invited experts	Berta	Ramiro Sánchez	Dr	Invited expert	Muséum National d'Histoire Naturelle	berta.ramiro-sanchez@mnhn.fr		✓
Chair	Alistair	Dunn	Mr	SC Chair	Ocean Environmental	Alistair.Dunn@OceanEnvironment.co.nz	✓	

Delegation	First name	Last name	Title	Position	Organisation	Email	In person	Virtual
Secretariat	Alexander	Meyer	Mr	Rapporteur	Urban Connections	Meyer@urbanconnections.jp	✓	
Secretariat	Thierry	Clot	Mr	Executive Secretary	SIOFA Secretariat	thierry.clot@siofa.org	✓	
Secretariat	Pierre	Peries	Mr	Data Officer	SIOFA Secretariat	pierre.peries@siofa.org	✓	
Secretariat	Marco	Milardi	Dr	Science Officer	SIOFA Secretariat	marco.milardi@siofa.org	✓	

ANNEX C: ADOPTED AGENDA

1. Opening

- 1.1 Welcome from the Scientific Committee Chair
- 1.2 Introduction of participants
- 1.3 Introduction to the meeting facilities and meeting arrangements

2. Administrative arrangements

- 2.1. Adoption of the agenda
 - 2.1.1. Confirmation of meeting documents
 - 2.1.2. Confirmation of meeting documents
- 2.2. Scientific Committee Chair's report

3. Fisheries Reports

- 3.1. National Reports
 - 3.1.1. CCP annual National Reports
 - 3.1.2. Guidelines for the submission of National Reports
- 3.2. Summary of SIOFA fisheries
 - 3.2.1. Overview of SIOFA fisheries
 - 3.2.2. CCP fishery characterisations
- 3.3. Ecosystem and Fisheries Summaries
 - 3.3.1. Report from the Intersessional Workshop the development of ecosystem and fisheries summaries (WS2022-SUM1)
 - 3.3.2. Ecosystem Summary
 - 3.3.3. Fisheries Summaries for toothfish (*Dissostichus eleginoides*, TOP), alfonsino (*Beryx splendens*, BYS), orange roughy (*Hoplostethus atlanticus*, ORY), oilfish (*Ruvettus pretiosus*, OIL), and *Lepidocybium flavobrunneum*, LEC), tarakihi (*Nemadactylus macropterus*, TAK), wreckfish (*Polyprion americanus*, WRF) and hapuku (*Polyprion oxygeneios*, WHA)
- 3.4. Advice to the MoP

4. Bottom fishing footprint

- 4.1. Updates to the bottom fishing footprint
- 4.2. Advice to the MoP

5. Data Access and Dissemination

- 5.1. Confidentiality of documents and data access
 - 5.1.1. Classification system for Scientific Committee documents
 - 5.1.2. Transparency and distribution of meeting documents
 - 5.1.3. Definition of public domain data
- 5.2. Other data access and dissemination issues
 - 5.2.1. Exchange of scientific toothfish data with CCAMLR
 - 5.2.2. Developments to the data section of the SIOFA website
 - 5.2.3. The SIOFA standard operating procedure for data use and data requests

6. Stock assessments and advice

- 6.1. Orange roughy
 - 6.1.1. Descriptive characterisation
 - 6.1.2. Stock monitoring and data collection
 - 6.1.3. Stock assessment
 - 6.1.4. Updates to the fisheries summary
- 6.2. Alfonsino
 - 6.2.1. Descriptive characterisation
 - 6.2.2. Stock monitoring and data collection
 - 6.2.2.1. Alfonsino acoustics

- 6.2.3. Stock assessment
- 6.2.4. Updates to the fisheries summary
- 6.3. Toothfish
 - 6.3.1. Descriptive characterisation
 - 6.3.2. Stock monitoring and data collection
 - 6.3.3. Stock assessment
 - 6.3.4. Updates to the fisheries summary
- 6.4. Oilfish
 - 6.4.1. Descriptive characterisation
 - 6.4.2. Stock monitoring and data collection
 - 6.4.3. Stock assessment
 - 6.4.4. Updates to the fisheries summary
- 6.5. Other species
- 6.6. Harvest strategies
 - 6.6.1. Report of the Joint MoP-SC Harvest Strategies Workshop (WS2023-HSPA)
- 6.7. Advice to the MoP

7. Bycatch

- 7.1. Definition of bycatch
- 7.2. Deepwater chondrichthyans
 - 7.2.1. Report of the Intersessional Workshop on Deepwater Sharks in SIOFA Area (WS2023-DWS)
 - 7.2.2. Review of progress against CMM 2022/19-12 (Sharks), including development of precautionary bycatch limits
- 7.3. Teleosts and other priority species
 - 7.3.1. Updates on the teleosts Ecological Risk Assessment
 - 7.3.2. Priority species for assessment
- 7.4. Seabirds, mammals, and incidental catch of other species of concern
 - 7.4.1. Report on observations of marine mammals interacting with fishing gear
 - 7.4.2. Fishing in IMMA areas
 - 7.4.3. Seabird mitigation measures
 - 7.4.4. IOTC bycatch

8. Vulnerable Marine Ecosystems (VME)

- 8.1. Report of the VME workshop (WS2022-VME1)
- 8.2. VME data and the setting VME of encounter thresholds
- 8.3. VME mapping project (PAE2021-02)
- 8.4. Revisions of the list of VME taxa

9. Data standards

- 9.1. Annual catch and effort data submission
- 9.2. Observer framework harmonisation
- 9.3. E-monitoring
- 9.4. Lost gear reported under CMM 2022/02 Annex A
- 9.5. Proposals for revisions to CMM 2022/02 (Data Standards)

10. Cooperation with external bodies

- 10.1. FIRMS coordination and work
- 10.2. FAO ABNJ DSF activities
- 10.3. Report of the Monaco Exploration

11. Future work

- 11.1. Progress of EU funded science projects
- 11.2. The SIOFA Performance Review
- 11.3. Organisation of the Scientific Committee and its working groups

11.4. Management and coordination of SIOFA science projects

11.5. Scientific Committee workplan and budget

12. Other business

12.1. Elections of the Chair and vice-Chair of Scientific Committee and its Working Groups

ANNEX D: LIST OF DOCUMENTS

Code	Document Title
SC-08-ADM-01	Registration form
SC-08-ADM-02	Template for meeting documents
SC-08-ADM-03	Meeting Provisional Agenda
SC-08-ADM-04	General Notice for SC meeting
SC-08-ADM-05	Meeting Revised Provisional Agenda
SC-08-ADM-06	List of SC8 Documents
SC-08-01	(REP) 2023 Annual National Report Australia
SC-08-02	(REP) 2023 Annual National Report China
SC-08-03	(REP) 2023 Annual National Report Cook Islands
SC-08-04	(REP) 2023 Annual National Report European Union
SC-08-05	(REP) 2023 Annual National Report France OT
SC-08-06	(REP) 2023 Annual National Report Japan
SC-08-07	(REP) 2023 Annual National Report Republic of Korea
SC-08-08	(REP) 2023 Annual National Report Mauritius
SC-08-09	(REP) 2023 Annual National Report Seychelles
SC-08-10	(REP) 2023 Annual National Report Chinese Taipei
SC-08-11	(REP) 2023 Annual National Report Thailand
SC-08-12	(REP) 2023 Annual National Report Comoros
SC-08-13	(REP) 2023 Annual National Report India
SC-08-14 Rev2	Overview of SIOFA Fisheries 2023 (RESTRICTED)
SC-08-15 Rev1	SIOFA Ecosystem Summary 2023 (RESTRICTED)
SC-08-16 Rev1	ORY fisheries summary (RESTRICTED)
SC-08-17	ALF fishery summary
SC-08-18 Rev1	TOT fishery summary (RESTRICTED)
SC-08-19 Rev1	OIL/LEC fishery summary
SC-08-20 Rev1	TAK fishery summary
SC-08-21 Rev1	HAU (WRF/WHA) fishery summary
SC-08-22	Report of the Workshop the development of ecosystem and fisheries summaries (WS2022-SUM1)
SC-08-23 Rev1	Updated SIOFA bottom fisheries footprint (RESTRICTED)
SC-08-24 Rev1	Guidelines for the submission of National Reports (with changes tracked)
SC-08-25	Convener's report WS2022-VME1
SC-08-26 Rev1	Available VME indicator taxa accidental captures from the Observer database and its usability for setting VME encounter thresholds (RESTRICTED)
SC-08-27 Rev1	IOTC bycatch species in the SIOFA Area (RESTRICTED)
SC-08-28	Draft Performance Review report on SC (RESTRICTED)
SC-08-29	Update on the ERA of deepwater chondrichthyan species (RESTRICTED)
SC-08-30	Project PAE2021-01 progress report (RESTRICTED)
SC-08-31 Rev1	Report of the workshop on harvest strategy pre-assessment
SC-08-32	Report of the workshop on deep-water sharks
SC-08-INFO-01	Observers and Factory-deck Crew are not Shark Taxonomists

Code	Document Title
SC-08-INFO-02	Abundance of Deepwater Shark Bycatch and Frequency of Species Caught by Benthopelagic Trawl in the SWIO During 2012 and 2014: What Does It Tell Managers? (RESTRICTED)
SC-08-INFO-03	Draft SC workplan and budget
SC-08-INFO-04	Summary of information on data and trends of the main SIOFA Stocks
SC-08-INFO-05	Report on SIOFA contribution to FIRMS activities
SC-08-INFO-06	Report on SIOFA contribution to FAO ABNJ DSF activities
SC-08-INFO-07	Report on current state/progress of EU funded science projects (between SC7 and SC8)
SC-08-INFO-08	Report on lost gear under CMM 2021/02 Annex A
SC-08-INFO-09	Report on observations of marine mammals interacting with fishing gear under CMM 2021/02 Annex B and Annex E
SC-08-INFO-10	Reports on data exchange with CCAMLR
SC-08-INFO-11	Summary of catch and effort (main target species and effort by gear type) in IMMA areas and SIOFA engagement in the IMMA process
SC-08-INFO-12	Data request procedure (Annex L of the MoP9 report)
SC-08-INFO-13	2022 Data Submission (2021 data)
SC-08-INFO-14	COK Fisheries characterization
SC-08-INFO-15	Report of the Monaco Exploration expedition on the Saya de Malha bank
SC-08-INFO-16	Transparency and distribution of documents
SC-08-INFO-17	EU FR-OT Toothfish Fisheries Characterization
SC-08-INFO-18 Rev1	SIOFA SC Draft Budget 2024-2026

ANNEX E: PROPOSED SIOFA STANDARD OPERATING PROCEDURE FOR DATA USE AND DATA REQUESTS

Introduction

CMM 2016/03 paragraph 2. (e) states that “Finer-scale data including catch and effort, length-frequency and observer data will be made available to the Scientific Committee and any of its working groups, on a confidential basis, to undertake its work.”.

However, there are differences in the views of CCPs on the modalities by which such data should be ‘made available’ (SC 07 paragraphs 54 - 56).

The Scientific Committee recommended the MoP consider providing documentation and guidelines on how CMM 2016/03 should be operationalised, including the implementation of standard operating procedures for data use and data requests provided in SC-07-08 (SC 07 paragraphs 54 - 56). The proposed standard operating procedure is also included as Section 6.2 of MoP-09-08.

Proposed standard operating procedure for data use and data requests

The standard operating procedure for data use and data requests presented in SC-07-08 seeks to provide a standard operating procedure to formalise the process by which SIOFA data are made available, to ensure that all relevant data owners ~~CCPs~~ are consulted, to increase awareness of the process, facilitate greater consultation and increase the scope for making data available.

The following, which is based on the procedures currently used in WCPFC and CCAMLR, provides a procedure to be implemented in SIOFA to manage all data releases from the Secretariat (where these ‘data releases’ includes database extracts and/or data analysis/summary products including meeting papers).

Upon the adoption of a standard operating procedure for data use and data requests for use in SIOFA, CMM 2016/03 paragraph 2 (f) could be simplified as follows (with strike through text deleted and red text inserted):

f) Catch and effort and length-frequency data grouped at a finer level of time-area stratification will only be released following the SIOFA standard operating procedure for data use and data requests.

The MoP is invited to consider and adopt the standard operating procedure for data use and data requests for use in SIOFA and to make the consequential change in CMM 2016/03 paragraph 2 (f).

SIOFA standard operating procedure for data use and data requests

Data Requests

Data requests should be received via secretariat@siofa.org in the first instance.

Public Domain data, that is currently in the public domain, may be provided directly from the Secretariat to the data requestor.

Requests for all other data should be dealt with as follows:

1. Request for access

A request for access to data that is not in the public domain should be accompanied by a standardised data request form (this should be sent to the data requestors for completion if not supplied with the request). This form, an example of which is given in Figure 3, specifies the type of data being requested, the spatial and temporal resolution and extent and the resolution and the proposed use of the data including any references to specific paragraphs that contain the requests for the analysis from the MoP, the SC and its working groups or the Compliance Committee.

Requester	Dr A Scientist (Employer, CCP, non-CCP, other)
Data	<u>Data type:</u> Haul by Haul toothfish catch and effort data, including <ul style="list-style-type: none"> ○ Setting dates ○ Setting coordinates ○ Number of hooks set and lost for each haul ○ Mass of all individual species caught ○ Vessels should be identified as being distinct but anonymised with respect to name and flag <u>Level of aggregation:</u> Haul by haul <u>Spatial and Temporal extent:</u> All SIOFA Area 2011-2021
Proposed use	Research question: Are CPUE measurements for toothfish catches biased by gear loss when fishing in exploratory areas where the sea floor topography is not well studied? Planned analysis: We will examine CPUE and gear loss rates spatially and temporally. Anticipated format to be used in presenting results: We will present a paper on variation of CPUE of target and non-target catch in the longline fishery for toothfish in the SIOFA Area to SERWG
SIOFA SC reference	SC 5 para xx-yy MoP3 para xx-yy

Figure 3. Example SIOFA request for access to data

2. Request for permission to release data

Unless otherwise advised ~~by a CCP, for CCPs,~~ the data primary contact SC Representative will be the ~~CCP's SC Representative data owner(s)/originator(s) primary contact (CCP data primary contact)~~ for all requests for permission to release data.

When the SIOFA data request form has been completed by the Requester the Secretariat will send it to all ~~CCP data primary contacts for those CCPs that are data~~ originator(s)/owner(s) of data that form part of the request. The following explanation will accompany each permission request:

In accordance with *CMM 2016/03 Conservation and Management Measure for Data Confidentiality and Procedures for access and use of data (Data Confidentiality)* the Secretariat is seeking your permission to release some of the data held at the SIOFA Secretariat of which you are the owner and/or originator. The details of the requester, the requested data, the proposed use and any references to specific requests for the analysis from the relevant SIOFA body are included in the table below.

Please email your permission or refusal to release these data, including any conditions and/or recommendations relating the proposed use of the data before [*insert date*]. If you have any questions or clarifications for the data requester, please email these to the Secretariat for forwarding.

Release of data for the analysis outlined above does not constitute permission to publish or release these data into the public domain. Such permission remains a matter to be determined between the requester and the data originator(s)/owner(s).

This request for permission to release data has been sent to the data contacts for the following CCPs and/or other owners [*list the data contacts of all data originators*]
e.g.

Australia, Dr A. Scientist France Dr B. Scientist

3. Secretariat correspondence

Following the request for permission to release data the Secretariat will follow the procedure outlined below:

- Request a response from the ~~CCP~~ data primary contact within 3 weeks.
- Follow up after 2 weeks to ~~CCP~~ data primary contact who have not yet responded.
- Request a response within 1 more week, notifying ~~CCP~~ data primary contact that, no data will be released without the expressed consent of the data owner. The Secretariat would continue engaging with the data owner ~~CCP~~ in the absence of answer. .
- Where a ~~CCP~~ data primary contact raises any questions or concerns, the Secretariat will facilitate consultation between data requester(s) and data owner(s) to address these concerns,
- Any subset of the data not approved for release will be excluded from the data extract.
- Prior to releasing the data, the requester(s) should be contacted to let them know the outcome of the data request process and provide details of the format and content of the data that will be released.

Release of data:

When agreement has been reached on what data can be released, the Secretariat will provide the data, metadata and associated documentation and will inform all data owners of the data release.

The Secretariat will provide all data releases by email as an attached zip file that is password protected.

Each data release from the SIOFA Secretariat will be given a reference number, and the data, query used to extract the data and the date(s) of extraction will be recorded in a data release registry. The reference number should be added to the Data Request form and this should be stored within a data release registry.

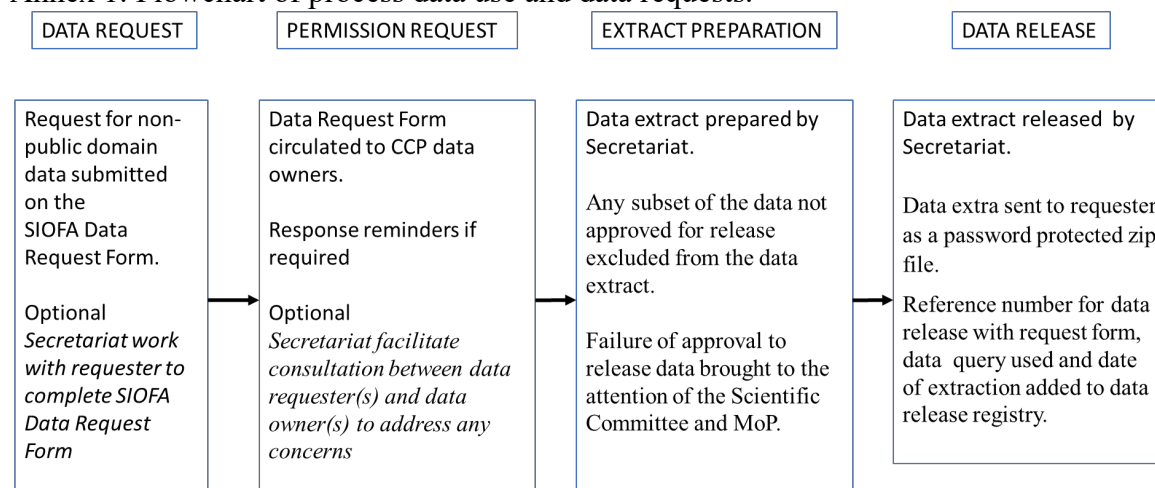
Use of data by the Secretariat

The Secretariat has access to all SIOFA data in order to carry out its functions on a day-to-day basis. Furthermore, the Secretariat is expected to present data products to the MoP, the SC and other subsidiary bodies for which the requirement (and in some cases the method including the data to be used and the format for presentation) will have been agreed by these bodies in advance. In those cases, the Secretariat should produce these papers as part of its normal work. Where additional data analyses (i.e. not those specifically requested by MoP, the SC and other subsidiary bodies) are undertaken and are prepared for inclusion in a paper to the Scientific Committee or its Working Groups, the Secretariat should follow the same procedures to seek permission to use the data as for any other data release.

Data Corrections

Each data release should be accompanied by a reporting form to allow users to identify any data errors that they encounter while using the data. The Secretariat will then review the information provided and implement a data verification and change process as required. Users should be advised of any data change that would potentially impact on the data included in an extract provided in a data extract from the past 12 months.

Annex 1: Flowchart of process data use and data requests.



<u>Data Request</u>		<u>Permission Request</u>		<u>Extract Preparation</u>		<u>Data Release</u>
<u>Request for non-public data submitted on the SIOFA Data Request Form.</u> <u>Optional: Secretariat works with requester to complete SIOFA Data Request Form</u>	➔	<u>Data Request Form circulated to data owners.</u> <u>Response reminders if required</u> <u>Optional: Secretariat facilitates consultation between data requester(s) and data owner(s) to address any concerns</u>	➔	<u>Any subset of the data not approved for release excluded from the data extract.</u> <u>Failure of approval to release data brought to the attention of Scientific Committee and MoP (through annual reporting on data request and release)</u>	➔	<u>Data extract sent to requester as a password protected zip file</u> <u>Reference number for data release with request form, data query used, and date of extraction added to data release registry</u>

ANNEX F: MEDIUM-TERM SC8 WORKPLAN**Recurring (annual) activities**

Summary Title	Lead	Provider	Notes
Development of 3-5 yr. Scientific Committee budget	SC Chair	SC Chairs committee	See paper SC-08-INFO-03
Review of VME indicator taxa list	SC	SC Delegations	
Annual report of VME encounters	Data Officer	Secretariat	Secretariat will report if any VME encounters have been submitted by CCPs
Annual review of VME encounters	SC	SC	
Summary of SIOFA data	Data Officer	Secretariat	Secretariat will summarize the available data at SIOFA
Update fisheries overview	Science Officer	Secretariat	
Update ecosystem summary	Science Officer	Secretariat	
Create/update fisheries summary	Science Officer	Secretariat	Note different timelines for each species as indicated in respective reports: ORY, ALF, TOT, HAU, OIL/LEC, CYO, RIB, TAK

These are activities that the SC will tackle every year and have been already established.

2023-2024 Workplan

Project code	Lead	Summary Title	Budget	Funding source	Project Status	Priority
PAE2021-01b		Identification of representative protected areas within SIOFA (ToR2)	10,000 €	EU Grant (GO2)	Contracted (report due April 2023)	
PAE2021-01c		Investigate and advise on the use of habitat suitability modelling in predicting benthic species diversity and distribution in SIOFA (ToR3)	10,000 €	EU Grant (GO2)	Contracted (report due April 2023)	
PAE2021-01d		Holistic framework for assessing and preventing Significant Adverse Impacts (SAIs) on VMEs (ToR4)	10,000 €	EU Grant (2021-2023) (GO2)	Contracted (report due April 2023)	
PAE2021-01e		Identify and update existing and potential SAIs within the SIOFA management area (ToR5)	5,000 €	EU Grant (2021-2023) (GO2)	Contracted (report due April 2023)	
SER2022-TOP1		Toothfish stock structure (molecular analysis)	8,333 €	EU grant GO1	Contracted	
SER2022-ORY1		Orange roughy stock structure	8,333 €	EU grant GO1	Contracted	
SER2022-BYS1		Alfonsino stock structure	10,000 €	EU grant GO1	Contracted	
SER2022-BYS2		Alfonsino otolith ageing + age validation using bomb radiometry	10,000 €	Mop9 + EU grant GO1	Contracted	
PAE2022-MPA1		Protocols to designate and evaluate MPAs	18,000 €	EU SIOFA-SEAs	Contracted	
SER2022-TOP2		Toothfish population spatial structure	34,000 €	EU SIOFA-SEAs	Contracted	
SEC2022-OBS1		Harmonisation of Scientific Observer programmes	48,000 €	EU SIOFA-SEAs	TOR	
DWS-2023-01	EU (Roberto Sarralde)	Improving the scientific advice for data-limited deep-water sharks caught longline fisheries in the SIOFA Area	None required	EU internal funding	Planned	
TOT-2023-01	EU (Roberto Sarralde)	Toothfish catch limits	10,000	MoP	Planned	
ORY-2023-01	COK (Steve Brouwer)	Age and growth of orange roughy	40,000	MoP	Planned	
ORY-2023-02	COK (Steve Brouwer)	Orange roughy acoustics	25,000	MoP	Planned	
DWS-2023-02	SIODFA (Paul Clerkin)	Identification and trends in Deepwater Sharks c	12,000	MoP	Planned	

A. Improving the scientific advice for data-limited deep-water sharks caught longline fisheries in the SIOFA Area (2023-2024)

Description:

To collect and analyse data for data-limited deep-water sharks caught using longline fisheries in the SIOFA Area.

Project objectives:

1. Design and implement a deepwater shark tagging project for sharks caught in longline fisheries in the SIOFA Area
2. Determine the post-release survival of these deep-water sharks
3. Collect biological data from deepwater shark species, including vertebrae and fin spines to assist in determining age composition, growth rates, and maximum age for each species, if possible within the project resources.
4. Identify and categorise shark biological stocks
5. Identify any other knowledge and data gaps
6. Conduct a conservation status assessment, if possible within the project resources.
7. Undertake an assessment of potential move-on rules for the CYO stock in SIOFA Subarea 2, with particular attention to catch rates in consecutive sets, spatial and depth distribution of fishing operations, and the distribution of the CYO population, if possible within the project resources.

Budget:

None (the project is funded by the EU).

Outputs:

1. To present reports to the SC that summarise the data collected and outcomes of scientific analyses with respect to the above objectives.
2. Develop a standardised CPUE index of abundance for CYO.
3. Develop a preliminary assessment of the stock status of CYO based on the above analyses.
4. Review of the current and previous management measures, including assessment of strengths and weaknesses of existing measures and consideration of how existing measures could be improved; a review of management measures employed by other jurisdictions; and the provision of mitigation measure recommendations

Provide reports which describe the analyses to the SC9 (2024)

B. Toothfish catch limits (2023-2024)

Description:

Develop low information approaches to determining catch limit advice for Del Cano toothfish stocks

Project objectives:

1. Develop, using the CCAMLR trend analysis rules, a low information approach to proposing catch limit advice for Del Cano toothfish stocks.

Budget:

EUR10,000

Project outputs:

To present reports to the SC that summarise methods and analyses based on data from the Del Cano region to SC9 (2024)

C. Age and growth of orange roughy (2023-2024)

Description:

This project builds on the work undertaken by Saunders (2021) and Brouwer et al. (2021) to develop growth and maturity curves for orange roughy (*Hoplostethus atlanticus*) on Walters Shoal (Walters shoal, WSR and Seamounts) and on the southwest Indian Rise (Meeting, South Ridge, Middle Ridge and North Ridge) in the SIOFA area, using otoliths collected and held by the Cook Islands.

The previous age estimates should also be made available to be included in this analysis to evaluate changes in growth over time.

Note, it is possible that not enough otoliths will be available from Southwest Indian Rise to produce sex separated growth curves for that area.

Objectives:

1. Select 350 otoliths spanning the size range of fish caught at each of Walters Shoal and the Southwest Indian Rise in the SIOFA area (a total of about 700 otoliths).
2. Develop sex separated and combined sex growth curves for orange roughy in both areas and as single SIOFA growth curves.
3. Use the biological sampling to develop maturity curves for each area.
4. Provide growth parameters for the stock assessment.

Budget:

EUR40,000 (estimated at EUR50 per otolith + some report development time) (Sept 2023 – Jul 2024 to advisory panel and to SC10)

Project outputs:

Provide at least one report which will be presented to the project advisory panel in July 2024 and to SC10 in 2025

D. Orange roughy acoustics (2023-2024)

Description:

Acoustic data are used as abundance indices in the SIOFA orange roughy stock assessments. As such, SIOFA requires the existing acoustic data that are collected by commercial vessels fishing for orange roughy be collated, checked for quality control purposes and then develop abundance estimates for use in the orange roughy stock assessments. The acoustic data (2007-2021) from one trawl vessel (Cook Islands) are available. The outcomes of this work should be collated in a report and presented to SC9 in 2024.

Objectives:

1. Collate the existing acoustic data from Cook Island vessels with the assistance of the SIOFA Secretariat. For all the new and historical acoustic data, provide a descriptive analysis including sampling periods, locations, attributes, and other relevant information.
2. Provide an analysis of the data quality for the most recent data (post 2020) collated in ToR 1 using the same techniques applied in 2018 and 2021 assessing various levels of uncertainty (e.g., species identification, survey design, target strength, absorption, calibration, and other relevant factors) at Walters Shoal (Walters shoal, WSR and Seamounts) and on the southwest Indian Rise (Meeting, South Ridge, Middle Ridge and North Ridge). Make recommendations on which acoustic data are of sufficient quality for use in the 2024 stock assessment updates.
3. Using the data of appropriate quality estimate the biomass of orange roughy using the same techniques applied in 2018 and 2022 or other relevant techniques to provide a time series of the orange roughy biomass estimates.

Budget:

EUR25,000 (Sept 2023 – Jul 2024 to PAP and at SC10)

Note for ORY and ALF acoustics, the addition of a gear technician would improve the data collections. The additional funding required for this would be 30,000 EURO for both the ORY and ALF acoustic data collection.

Project outputs:

1. Table the acoustic survey protocol currently in use as an appendix to this document so that it is documented within the SC.
2. Provide at least one report which will be presented to the PAP in July 2024 and SC10

E. Identification and trends in Deepwater Sharks caught by the Southern Indian Ocean Benthopelagic Fishery (2023-2025)

Description:

Undertake a census of deep-sea sharks caught during one trip of a benthopelagic factory trawler to Walters Shoal and the SWIO Ridge in early 2024.

Objectives:

1. Compare to shark species and capture rates to the 2012 and 2014 survey to assess changes in shark abundance and biodiversity over the last ten years.
2. Collect spine and vertebrae samples of Portuguese dogfish to support the work under Project A.
3. Develop, test and optimise identification guides being developed with SIOFA and FAO's DSF Project.

Budget:

EUR12,000 to cover travel, equipment and sampling supplies, and shipping of samples to laboratories for analysis.

Project outputs:

A report describing the results of this research and updated identification guides will be presented to SC-10 in 2025.

2024-2025 Workplan

Project code	Lead	Summary Title	Budget	Funding source	Project Status	Priority
ALF-2024-01	JPN (Takehiro Okuda)	Age and growth of alfonso	25,000	MoP	Planned	
ALF-2024-02	JPN (Takehiro Okuda)	Alfonso acoustics	10,000	MoP	Planned	
ORY-2024-01	COK (Steve Brouwer)	Orange roughy stock assessment	50,000	MoP	Planned	

F. Age and growth of alfonso (2024-2025)

Description:

This project will contribute to the 2026 assessment and build on the work undertaken by Krusic-Golub K. and Robertson S.G. (2020), Brouwer et al. (2020), and Brouwer et al. (2021) to develop growth and maturity curves for Alfonso (*Beryx splendens*) in the West and East SIOFA areas of the Southern Indian Ocean, using otoliths collected and held by the Cook Islands and Japan. Note that results from the bomb radiocarbon ageing project (SER2022-BYS2) will need to be considered if this indicates that the current ageing methodology needs revising)

The previous age data should also be made available to be included in this analysis to evaluate changes in growth over time.

Objectives:

1. Select 20 otoliths for each 5 cm length bin for both male and female fishes caught at each of the West and East SIOFA areas of the Southern Indian Ocean (about 400 otoliths in total).
2. Develop sex separated and combined sex growth curves for Alfonsino for both areas and combined area SIOFA growth curves.
3. Use the biological sampling to develop maturity curves in both areas.
4. Provide growth curve parameters suitable for use in a stock assessment for the stocks.

Budget:

EUR25,000 (estimated at EUR50 per otolith + some report development time) for ageing of otoliths from CCPs other than Japan. (In this project, otoliths collected by Japan will be processed and aged by Japanese scientists and incorporated into growth and maturity analysis).

Project outputs:

Provide reports which describe the analyses to the SC10

G. Alfonsino acoustics (2024-2025)

Description:

Acoustic data are used as abundance indices in the SIOFA orange roughy stock assessments, but there are questions regarding their feasibility for use for alfonsino. SIOFA requires the existing acoustic data, that are collected by commercial vessels fishing for alfonsino, be collated, checked for quality control purposes and then assessed for their feasibility for use as an abundance estimate for use in the alfonsino stock assessments. The acoustic data (2023/2024) from one trawl vessel (Cook Islands) will be available.

Objectives:

1. Collate the existing acoustic data from the Cook Island vessels.
2. Provide an analysis of the data quality for the data collated in ToR 1 using the same techniques applied in 2018, 2021 and 2024 orange roughy surveys assessing levels of uncertainty (e.g., acoustic signal vs catch, species identification, survey design, target strength, absorption, calibration, and other relevant factors). Make recommendations on the future feasibility of alfonsino acoustic surveys for assessing biomass trends for use in stock assessments.

Budget:

EUR10,000

Note for ORY and ALF acoustics, the addition of a gear technician would improve the data collections. The additional funding required for this would be 30,000 EURO annually for both the ORY and ALF acoustic data collection.

Project outputs:

Provide at least one report which will be presented to the SC10 (2025)

H. Orange roughy stock assessment (2024-2025)

Description:

Undertake a stock assessments of orange roughy stocks in the SIOFA area. This should build on and improve the work of the two previous assessments (Cordue 2018 and Roa-Ureta et al. 2022). While there could be multiple sub-stocks of orange roughy in the SIOFA area until work is completed on the stock structure two broad stocks should be assumed one on Walters Shoal (Walters shoal, WSR and Seamounts) and the other on the southwest Indian Rise (Meeting, South Ridge, Middle Ridge and North Ridge). The outcomes of this assessment should be collated in a report and presented to SC10 in 2024.

Objectives:

1. Meet with the SIOFA orange roughy assessment review pre-assessment review panel to discuss data input and potential assessment approaches.

2. Review the previous stock assessments, all new information (including updated growth, maturity and acoustic data), and other relevant information to undertake an age structured production model to estimate the stock status of orange roughy at Walters Shoal and the Southwest Indian Rise.
3. The SIOFA interim reference points (Target = 40%B₀ and Limit = 20%B₀), and if SIOFA has not yet adopted final target and limit reference points, then a range of other reference points should be considered and estimates of stock status, fishing mortality and biomass should be provided in the terminal year of the assessment and over time including, at least but not limited to status in relationship to B₄₀% and B₂₀%, MSY, SBMSY, SB₀, SBF=0, SB/SBMSY, SB/SBF=0, SB/SB₀, F, FMSY, F/FMSY.
4. Estimates of 20-year projected status (at 5-year intervals) under a range of future catch scenarios and appropriate estimates of future productivity (i.e., year class strengths)

Budget:

EUR50,000 (Mar 2024 – Mar 2025 at SC10)

Project outputs:

Provide at least one report which will be presented to the SC10.

2025-2026 Workplan

Project code	Lead	Summary Title	Budget	Funding source	Project Status	Priority
ALF-2025-01	JPN (Takehiro Okuda)	Alfonsino stock assessment	50,000	MoP	Planned	

I. Alfonsino stock assessment (2025-2026)

Description:

Update the stock assessment of Alfonsino stocks in the SIOFA area. This should build on and improve the work of the previous assessment (Brandão et al. 2020). The outcomes of this assessment should be collated in a report and presented to SC11 in 2026.

Objectives:

1. Meet with the SIOFA Alfonsino assessment review pre-assessment review panel to discuss data input and potential assessment approaches.
2. Review the previous stock assessments, all new information (including updated growth, maturity and acoustic data), and other relevant information to undertake an age structured production model to estimate the stock status of Alfonsino.
3. The SIOFA interim reference points (Target = 40%B₀ and Limit = 20%B₀), and if SIOFA has not yet adopted final target and limit reference points, then a range of other reference points should be considered and estimates of stock status, fishing mortality and biomass should be provided in the terminal year of the assessment and over time including, at least but not limited to status in relationship to B₄₀% and B₂₀%, MSY, SBMSY, SB₀, SBF=0, SB/SBMSY, SB/SBF=0, SB/SB₀, F, FMSY, F/FMSY.
4. Estimates of 20-year projected status (in 5-year intervals) under a range of future catch scenarios and appropriate estimates of future productivity (i.e., year class strengths)

Budget:

EUR50,000 (Mar 2025 – Mar 2026 at SC11)

Project outputs:

Provide reports which describe the analyses to the SC11

ANNEX G: DEVELOPMENT OF HARVEST STRATEGIES AND THE TIMELINE FOR THE IMPLEMENTATION OF PRE-ASSESSMENTS, ASSESSMENTS, MANAGEMENT OBJECTIVES AND IMPLEMENTATION OF HARVEST STRATEGIES

	SC	MoP
Step 1 Define management objectives		1. Specify management objectives: <ul style="list-style-type: none"> ➤ biological (including ecosystem considerations) e.g., ensuring long-term sustainability and productivity; recovering heavily depleted stocks ➤ socio-economic e.g., maintaining reasonable stability in catches for the industry
	2. Propose reference points based on management objectives: limit reference points (B_{lim} and/or F_{lim}), and target reference points (B_{TARGET} and/or F_{TARGET})	
		3. Select reference points
	4. Characterise the sources and values of uncertainties associated with the estimation of reference points (target and limit)	
		5. Specify acceptable levels of risk to be used in evaluating possible consequences of management actions, and time horizons for fishing mortality adjustments to avoid stock collapse, breaching limit reference point or achieve the target reference.
Step 2 Determine appropriate fisheries monitoring regime	1. Identify data collection and monitoring activities required to reliably evaluate resource status with respect to reference points	
		2. Implement data collection and monitoring programme to deliver consistent, high-quality data into the future.
	3. Determine how frequently to monitor (survey and/or assessments)	

Step 3 Develop candidate Harvest Control Rules	1. Propose candidate Harvest Control Rules (HCR): actions for controlling fishing mortality (F) or adjusting catch with respect to pre-defined, stock-specific, precautionary reference points for both biomass (B) and fishing mortality (F) were possible.	
		2. Select HCR
	3. Conditions for Re-Evaluating Reference Points and HCR	
Step 4 Test HCR with MSE	1. Test HCR and compare expected performance of harvest strategies	
		2. Adopt appropriate harvest strategy
Step 5 Implement Harvest Strategy		1. Implement management changes based on HCR
	2. Monitor (survey and/or assessment) and assess stock(s)	
	3. Determine stock status relative to reference points	
		4. Determine if Harvest Strategy delivers the objectives
Step 6 Improve assessment and harvest strategy	1. Review reference points and HCR if needed	
	2. Define research requirements to improve the quantification and evaluation of uncertainty (i.e., risk analysis), as well as methodological developments required to reduce uncertainty.	

ANNEX H: DRAFT TERMS OF REFERENCE FOR THE JOINT MEETING OF THE MOP AND SCIENTIFIC COMMITTEE ON THE DEVELOPMENT OF HARVEST STRATEGIES

1. The aim of the Joint Meeting of the MoP and Scientific Committee on the Development of Harvest Strategies (Joint-WSDHS) is to promote a science-management dialogue on the development of harvest strategies for SIOFA stocks.
2. The workshop would focus on those stocks identified by the MoP for the initial development of harvest strategies.
3. The Joint-WSDHS would have the following objectives:
 - a. To enhance mutual, consistent understanding and capacity building through focused interactions and communications among managers, scientists and other stakeholders on the objectives and outcomes relating to harvest strategies for stocks identified by the MoP for the initial development of harvest strategies. Specifically, to aid
 - (i) the ability of managers to drive the process of harvest strategy development and guide the scientific work; and
 - (ii) the ability of scientists to efficiently deliver relevant scientific advice.
 - b. To facilitate the iterative process of decision making in relation to SIOFA harvest strategies by the MoP.
 - c. To identify initial candidate harvest strategy options for development by the Scientific Committee.
4. The Joint-WSDHS meet in 2024, either in conjunction with the SC or the MoP meetings.

ANNEX I: INTERIM SPECIES DESIGNATION TABLE

Cell colours represent primary species (yellow) and secondary species (blue) for evaluation and reporting purposes. Note the table is dynamic and species can change designation and new species can be added as needed. Note some species appear in multiple columns for a single fishery as retention practices may differ between fleets. Note this list was derived from CCP nominations.

Fishery	Target/Targeted	Bycatch	
		Retained	Discarded
Deepwater bottom trawl (CK, AU)	BYS-Splendid alfonsino	OEO-Oreos nei.	All elasmobranchs
	ORY-Orange roughy	BOE-Black oreo	HYD-Ratfishes nei.
	SSO-Smooth oreo dory	BOR-Boarfishes nei.	ONV-Spiky oreo
	EPI-Black cardinal fish	BEO-Crested sculpin	SQU-Squid
	EDR-Pelagic armourhead		
Deep mid-water trawl (CK)	BYS-Splendid alfonsino	OEO-Oreos nei	All elasmobranchs
	ORY-Orange roughy	BOE- Black oreo	OIL-Oilfish
	CDL-Cardinal fishes	BNS-Smallfin lanternfish	ONV-Spiky oreo
	BWA-Bluenose warehou	BOR- Boarfishes nei.	HYD-Ratfishes
	EPI-Black cardinal fish	EMM-Cape bonnetmouth	SQU-Squid
	EDR-Pelagic armourhead	BBY-White-ribbed toadfish	
	SEY-Violet warehou	WHA-Hapuku wreckfish	
		ONV-Spiky oreo	
Mid-water trawl (JP,)	BYS-Splendid alfonsino	WHA-Hapuku wreckfish	CDL-Cardinal fishes
	SEY-Violet warehou	EDR-Pelagic armourhead	EMM-Cape bonnetmouth
		BWA-Bluenose warehou	RGY-Narrowbanded sole
		BXD-alfonsino	
		EPI-Black cardinal fish	
		ONV-Spiky oreo	
		SEY-Violet warehou	
		WRF-Wreckfish	
		PRP-Roudi escolar	
		SFS-Silver scabbardfish	
Shallow bottom trawl (TH)	LIB-Brushtooth lizardfish	SUN-Angel shark	SCO-Scorpion fish

	RUS-Indian scad	SDV-Mustelus species	FIP-Red cornetfish
	KZJ-Thredfin bream	CWZ-Carcharhinus sharks nei.	CRS-Swimming crabs?
	UPM-Goldfin goatfish		
	DCC-Shortfin scad		
	LTQ-Sky emperor		
	BIS-Bigeye scad		
	YBS-bigeye barracuda		
Bottom longline (AU, EU, FR-OT)	TOP-Toothfish	CYO-Portuguese dogfish	CYO-Portuguese dogfish
	WHA-Hapuku wreckfish	ANT-Violet cod	ANT-Violet cod
	RIB-Common mora	GRV-macrourids	SKX-skates
		WHA-Hapuku wreckfish	BYR-Sandpaper skate
		RFA-Whiteleg skate	RFA-Whiteleg skate
			COX-Congor eels
			BSF- Black scabbard fish
Surface longline (TW)	OIL-oilfish	BIL- Billfish*	GES-Snake mackerel
	LEC-Escolar	TUN-Tuna *	CUT-Scabbard fishes
		BSH-blue shark	ALV-Common thresher shark
		FAL-Silky shark	PTH-Pelagic thresher
		MAK-Mako sharks	BTH-Bigeye thresher
		DOL-Mahi mahi	THR-Thresher sharks
		WAH-Wahoo	RMB-Giant manta
		COM-Spanish mackerel	RMV-Mobula spp.
		BAC-Pickhandle barracuda	OCS-Oceanic whitetip shark
		LAG-Opah	
Handline shallow water (MR)	LTQ-Sky emperor	ARV-Green jobfish	
	LHN-Spangled emperor		
	LHB-Spotcheak emperor		
Lines (Mechanised) deep water (MR)	ETC-Deepwater red snapper	PLM-Spotted coral grouper	
	ETA-Deepwater longtail red snapper	VRL-Yellow edged lyretail	
	LWA-Goldflag jobfish	ARV-Green jobfish	
	PFM-Crimson jobfish		
	OXR-Frenchman seabream		
	EEP-Comet grouper		
Handline (TH, MR)	NGU-Yellow spotted trevally	CCF-Pigeye shark	YFT-yellowfin tuna

	NGY-Bludger		MTM-Eagle ray
	NGX- <i>Carangoides</i> species		KAW-Kawakawa
	EMN-Marbled coral groper		
	LTQ-Sky emperor		
	LUB-Emperor red snapper		
	LJB-Two-spot red snapper		

* These species are managed by, and reported at the species level to, IOTC.

ANNEX J: SC PROPOSED CHANGES TO ANNEX 1 OF CMM 2022/12 (SHARKS)

FAO code	English common name	French common name	Scientific name
APD	Smallbelly catshark	Holbiche artouca	<i>Apristurus indicus</i>
BZL	Narrowhead catshark		<i>Bythaelurus tenuicephalus</i>
BZO	Bach's catshark		<i>Bythaelurus bachi</i>
CYO	Portuguese dogfish	Pailona commun	<i>Centroscymnus coelolepis</i>
CYP	Longnose velvet dogfish	Pailona à long nez	<i>Centroselachus crepidater</i> <i>Centroscymnus-crepidater</i>
CYU	Plunket shark	Pailona austral	<i>Scymnodon plunketi</i> <i>Centroscymnus-plunketi</i>
DCA	Birdbeak dogfish	Squale savate	<i>Deania calceusa</i>
ETP	Smooth lanternshark	Sagre nain	<i>Etmopterus pusillus</i>
EZT	Blue-eye lanternshark		Etmopterus viator
EZU	Whitecheek lanternshark		<i>Etmopterus alphas</i>
ETB	Blurred smooth lantern shark		Etmopterus bigelowi
GUP	Gulper shark	Squale-chagrin commun	<i>Centrophorus granulosus</i>
GUQ	Leafscale gulper shark	Squale-chagrin de l'Atlantique	Centrophorus squamosus
CPU	Little gulper shark	Petit squale-chagrin	Centrophorus uyato
HCR	Pacific longnose chimaera	Chimère à nez rigide	<i>Harriotta raleighana</i>
HXC	Frilled shark	Requin lézard	<i>Chlamydoselachus anguineus</i>
HXN	Bigeyed sixgill shark	Requin-vache	<i>Hexanchus nakamurai</i>
LMO	Goblin shark	Requin lutin	<i>Mitsukurina owstoni</i>
QUK	Shortspine spurdog	Aiguillat épinette	Squalus mitsukurii
SDQ	Longsnout dogfish	Squale-savate à long nez	Deania quadrispinosa
SDU	Arrowhead dogfish	Squale-savate lutin	Deania profundorum
SCK	Kitefin shark	Squale liche	<i>Dalatias licha</i>
SSQ	Velvet dogfish		Zameus squamulosus
SONRZZ	Pacific Southern sleeper shark	Laimargue dormeur	<i>Somniosus antarcticus</i> <i>Somniosus-pacificus</i>
SSQ	Velvet dogfish	–	Zameus squamulosus
ZZC	Dark-mouth chimaera	–	<i>Chimaera buccanigella</i>
ZZD	Falkor chimaera	–	<i>Chimaera didierae</i>
ZZE	Seafarer's ghost shark		Chimaera willwatchi
N/A			Bathyrhaja tunae
N/A	Paddlenose chimaera		Rhinochimaera africana
ZZE	Seafarer's ghost shark	–	<i>Chimaera willwatchi</i>

ANNEX K: SC PROPOSED REVISIONS CMM 2020/01 (Interim Management of Bottom Fishing)

Annex 1 - SIOFA VME indicator taxa

Chemosynthetic organisms (CXV) (no taxa specified)

Cnidaria (CNI), which can be, if possible, detailed in recording as: Gorgonacea (GGW) (Order), [Anthoathecata](#) ~~Anthoathecatae~~ (AZN) (Order), Stylasteridae (AXT) (Family), Scleractinia (CSS) (Order), Antipatharia (AQZ) (Order), Zoantharia (ZOT) (Order), Actiniaria (ATX) (Order), Alcyonacea (AJZ) (Order), Pennatulacea (NTW) (Order)

Porifera (PFR), which can be, if possible, detailed in recording as: Hexactinellida (HXY) (Class), Demospongiae (DMO) (Class)

Asciacea (SSX) (Class)

[Bryozoa](#) ~~Bryozoans~~ (BZN) (Phylum)

Brachiopoda (BRQ) (Phylum)

Pterobranchia (HET)

Serpulidae (SZS) (Family)

[Xenophyophorea](#) ~~Xenophyophora~~ (XEF) (Phylum)

Bathylasmatidae (BWY) (Family)

[Crinoidea](#) ~~Stalked crinoids~~ (CWD) (Class)

Euryalida (OEQ) (Order)

Cidaroida (CVD) (Order)

ANNEX L: AVAILABLE MANAGEMENT MEASURES AND VOLUNTARY INDUSTRY ACTIONS INTENDED TO MINIMIZE TRAWLING EFFECTS AND EXPECTED PERFORMANCE

Evaluation of each measure/action is based on four evaluation metrics and predicted impacts from a yield-impact model (derived from McConnaughey et al. 2020). Impact is expressed as effects on fractional depletion of benthic biomass per trawl pass (d) or catchability of target species (q), recovery rate of the benthos (rb) and trawling intensity (F) on relative benthic status at regional scales (RBS) and on target-stock biomass (Bf). The table was edited by the VME Workshop by assigning a colour coding to each measure/action according to whether advice had previously been elaborated by Scientific Committee and by providing an estimate of the timeline that the Scientific Committee would need to provide (further) advice on each measure/action.

Measure/action	Objective	Benthic biota	Sustainable fish populations and food production	Ecosystems and ecosystem services	Fleet performance	Impact	Timeline that the SC would need to provide (further) advice
Technical measure							
1. Gear design and operations	<ul style="list-style-type: none"> Reduce impacts and maintain or increase catchability of target species. 	<ul style="list-style-type: none"> Less depletion per unit effort and/or catch. Reduced gear penetration could open access to new grounds thereby increasing overall footprint. Smaller footprint if operational changes improve efficiency and/or reduce total effort. 	<ul style="list-style-type: none"> Higher catch per unit effort and/or catch per unit of benthic impact—may be lower if gear durability limits bottom contact. 	<ul style="list-style-type: none"> Increased stability and function with increased RBS. Limited knowledge of newly developed designs. 	<ul style="list-style-type: none"> Reduced operating costs for more-selective/energy efficient/'smart' gears. Increased F for same yield if d and q decrease equally. Must recover capital costs for conversion. Extended gear life. Experimental access to closed areas. 	RBS ↑ d ↓ q ↑↓	3-4 years
Spatial controls							
2. Prohibitions by gear type	<ul style="list-style-type: none"> Eliminate high-impact gears in a defined region. 	<ul style="list-style-type: none"> Comprehensive protection and decreased d. More follow-up studies needed 	<ul style="list-style-type: none"> Reduced harvest of some target species if high impact gears were more efficient. Bycatch or product-quality complications possible for different gears or fishing grounds. 	<ul style="list-style-type: none"> Increased stability and function with increased RBS. 	<ul style="list-style-type: none"> New economic opportunities for artisanal fisheries. In the short term, reduced catches of target species unless other gears compensate. In the long term, increased costs if less efficient gears adopted. Reduced costs if less efficient gears are replaced. New transition/allocation 	RBS ↑ d ↓	3-4 years

Measure/action	Objective	Benthic biota	Sustainable fish populations and food production	Ecosystems and ecosystem services	Fleet performance	Impact	Timeline that the SC would need to provide (further) advice
Technical measure							
					costs and socioeconomic impacts		
3. Freeze trawling footprint	<ul style="list-style-type: none"> • Confine impacts to previously disturbed areas. 	<ul style="list-style-type: none"> • Minimizes benthic impact on previously unfished areas. 	<ul style="list-style-type: none"> • Reduced catch if distribution of target species change. • Constrains full exploitation of an expanding fishery. • May prevent fishery development and overexploitation (creates de facto MPA). 	<ul style="list-style-type: none"> • Preserves ecosystem integrity and function in untrawled areas, with potential spillover benefits for trawled areas. 	<ul style="list-style-type: none"> • Opportunity costs if unable to prospect for new stocks/areas. • Limits adaptive capacity. • May deter development of new fleets and technologies. 	RBS ↑	1-2 years
4. Nearshore restrictions and zoning	<ul style="list-style-type: none"> • Reduce trawling in shallow sensitive habitats and minimize gear conflicts. 	<ul style="list-style-type: none"> • Protects shallow or nearshore (nursery) habitats. • Displaced effort could increase footprint. 	<ul style="list-style-type: none"> • Initial decline offset by future benefits if sensitive nursery areas for target species are protected, unless markets exist for juvenile stages. 	<ul style="list-style-type: none"> • Beneficial if sensitive habitats or nursery areas are included. 	<ul style="list-style-type: none"> • May be allocative, protecting nearshore/recreational fisheries and eco-tourism. • Possible expenditures to increase fleet capacity for new grounds. 	RBS ↑ (inshore) RBS = ↓ (offshore)	
5. Prohibitions by habitat type	<ul style="list-style-type: none"> • Protect small-scale sensitive habitats. 	<ul style="list-style-type: none"> • Beneficial when sensitive habitats identified and permanently protected — particularly useful offshore. 	<ul style="list-style-type: none"> • Probably very small because these are small areas—difficult to estimate. 	<ul style="list-style-type: none"> • Provides protected representative habitats (ecological reference points). • Preserves unique ecological functions. 	<ul style="list-style-type: none"> • Lost yield if target species are strongly associated with sensitive habitats. • Economic benefits for small-scale fisheries and eco-tourism. • Real-time closures impose movement costs. 	RBS ↑ (designated area) RBS = ↓ (other areas)	3-4 years
6. Multipurpose habitat management	<ul style="list-style-type: none"> • Broadly protect essential, representative and vulnerable habitats. 	<ul style="list-style-type: none"> • Protects sensitive habitats when trawling is restricted. • Spillover effects benefit depleted areas. • Displaced effort 	<ul style="list-style-type: none"> • Benefits of larval export and spillover of juveniles/adults into adjacent fisheries but may be limited by poaching and trawling along the boundary. 	<ul style="list-style-type: none"> • Spatial extent/connectivity, population/habitat characteristics and level of protection determine benefits. • Serve as ecological 	<ul style="list-style-type: none"> • No-take rules modify fishing patterns. • Networks may increase recruitment/prey availability, but large networks may reduce yields. 	RBS ↑ (designated area) RBS = ↓ (other areas)	5+ years

Measure/action	Objective	Benthic biota	Sustainable fish populations and food production	Ecosystems and ecosystem services	Fleet performance	Impact	Timeline that the SC would need to provide (further) advice
Technical measure							
		could increase footprint.		references for trawled areas.			
Impact quotas							
7. Invertebrate bycatch quotas	• Reduce bycatch of benthic invertebrates	• Provides incentives for fleet to avoid sensitive species at much smaller spatial scale than could be regulated top-down.	• Effects could be very small— needs to be evaluated.	• Should reduce impacts on sensitive habitats and associated functions — needs to be evaluated.	• Extra costs for observer or observer systems. More flexible than other gear/area restrictions.	RBS = ↑	5+ years
8. Habitat impact quotas	• Habitat conservation to protect benthic biota	• Limits impacts by reducing effort on sensitive biota, if habitat maps exist.	• Provides limited access to stocks in sensitive habitats. • Effects could be very small - needs to be evaluated	• Should reduce impacts on sensitive habitats and associated functions — needs to be evaluated.	• Requirement for high frequency VMS and habitat maps may impose costs.	RBS = ↑ rb ↑ in the fished areas	5+ years
Effort control							
9. Removal of effort	• Reduce impacts by reducing fishing activity.	• Generally reduces benthic impacts (especially high impact gears in sensitive areas). • Smaller footprint will relocate / concentrate impacts	• Yield benefits for overfished stocks only. • Limiting days at sea may concentrate effort nearshore.	• Generally beneficial as degraded habitats recover.	• Reduced competition for those that remain, but total catch may decline. • Gains offset by increasing capacity and technology 'creep'. • Problematic for employment goals.	RBS ↑ F ↓ Bf ↑	3-4 years

Colour key:

No advice currently available from SC

Some advice provided by SC

Not applicable

Reference

McConnaughey, R.A.; Hiddink, J.G.; Jennings, S.; Pitcher, C.R.; Kaiser, M.J.; Suuronen, P.; Sciberras, M.; Rijnsdorp, A.D.; Collie, J.S.; Mazor, T.; Amoroso, R.O.; Parma, A.M.; Hilborn, R. (2020). Choosing best practices for managing impacts of trawl fishing on seabed habitats and biota. Fish Fish 21, 319–337. <https://doi.org/10.1111/faf.12431>

ANNEX M: PROS AND CONS OF THE DIFFERENT CATEGORIES OF VME MANAGEMENT MEASURES AVAILABLE TO SIOFA

Categories	Pros	Cons	Implications	Additional notes
Technical measures (e.g., gear restrictions, gear performance criteria, etc)	Most vessels only fish with one or two gear types, so monitoring is simpler Allows fishing to continue in some forms in most areas	Need to develop gear/method definitions for management	What gear coverage would be managed and how. All bottom contact gears? Or 'high impact' gear only?	
Spatial controls (area closures)	Only tool that can provide absolute protection of VMEs in closed areas Compliance tools should already exist for most Members	Restricts fishing from 'closed' locations Potential to concentrate fishing into smaller areas on VMEs as well as target and bycatch species		
Spatial controls (move on rules)	Adaptive to new information	High resolution location data for fishing activity Displace effort into new areas where VMEs may be present	May affect confidentiality of fishing locations and commercial enterprise Requires a review process to assess move-on locations and then follow-up actions	
Impact quotas	Adaptive to new information	Difficult to implement a management regime, especially given the lack of data in the SIOFA Area Requires a higher threshold of data to develop a management regime	Unsure if this is useful in the SIOFA Area? Are there any case studies elsewhere that can be drawn upon?	e.g., a cumulative amount of taxa recorded over a period of time for a spatial area may trigger a management response
Effort controls	SIOFA has some management controls for total effort in place already (CMM 2020/01) Relatively simple to implement	...but they may not be that good for managing VMEs! Requires a harmonised approach over a large area	Broad and potentially a coarse management approach that may not provide protection at smaller spatial scales. Unlikely to be useful unless fishing is essentially random over space	e.g., limit total effort in an area (i.e., number of tows or lines set in an area)

ANNEX N: SC PROPOSED REVISIONS TO CMM 2022/02 (DATA STANDARDS)

The Scientific Committee proposed several changes to CMM 2022/02 in regard to VME recording at its 8th meeting.

Changes are proposed in the VME section of Annex A: vessels catch and efforts, and in the VME-benthos section of Annex B, observer data.

They are highlighted below in tracked changes:

Annex A: Vessel Catch and Effort Data

Incidental bycatch of marine mammals, seabirds, reptiles, VME and 'other species of concern'

Presence: Yes / No

For each species caught

- Taxa name
- Number alive
- Number dead or injured

Annex B: Observer Data

VME Taxa

Presence: Yes/No

- | | |
|--|--|
| | <p>a) Species (identified taxonomically as far as possible or accompanied by a photograph where identification is difficult).</p> <p>b) An estimate of the quantity (weight (kg) or volume (m3)) of each listed benthic species caught in the tow (and the unit of measurement).</p> <p><u>c)</u> An overall estimate of the total quantity (weight (kg) or volume (m3)) of all invertebrate benthic species caught in the tow (and the unit of measurement).</p> <p><u>e)d)</u> <u>Where possible, provide the live or dead status for corals</u></p> <p><u>d)e)</u> Where possible, and particularly for new or scarce benthic species which do not appear in ID guides, whole samples should be collected and suitably preserved for identification on shore.</p> |
|--|--|

e) Collect representative biological samples from the entire VME catch. (Biological samples shall be collected and frozen when requested by the scientific authority in a Contracting Party). For some coral species that are under the CITES list photographs should be taken.

Other sessile benthos taxa

Presence: Yes/No

For each catch of ~~benthic organisms species~~ taxa

Scientific names (identified to the finest at the lowest taxon level possible)

FAO code (if available)

Estimation of the amount caught

ANNEX O: GUIDELINES FOR THE DEVELOPMENT OF THE SIOFA SC WORKPLAN

To aid development and successful completion of projects for Scientific Committee (SC) work as part of its workplan, the SC noted that the following guidelines should be used:

1. Identify, for each project in its workplan:
 - a. The specific project objectives, e.g., 1-2 paragraph(s) describing the project title, objectives, and required outputs.
 - b. The Project Lead, e.g., the SC Chair, SC Vice-Chair, or SC delegation representative or scientific expert.
 - c. The timetable for implementation, the duration of the project, and the SC (or other appropriate meeting) where the outcomes should be reported.
 - d. The funding source and amount of funds requested (if required) for undertaking the project.
 - e. A Project Advisory Panel for each project where SIOFA employs external consultants, constituted of the SC Chair or Vice-Chair, Project Lead, and at least 1-2 relevant experts from SC delegations.
2. Each project should be prioritised to allow efforts to be directed towards those with the highest priority.
3. For SC Workshops, ensure that the Workshop convener(s), Workshop terms of reference, timetable, and any papers or reports required for the workshop are identified when Workshops are agreed by the Scientific Committee

Further, the Scientific Committee noted that it should:

1. Take account of potential delays when planning related and sequential projects.
2. Develop project timelines that are a minimum of 2 years between the time of proposal and the expected time of delivery. This is to allow the consideration of project proposals by MoP, and the subsequent development of terms of reference, contracting of consultants, and undertaking of the scientific work to meet the project objectives.
3. Request that the MoP note the guidelines above, and request that they take these into account when directing the Scientific Committee to undertake specific tasks.